LINEAR CONTROLS, INC.

SAFE OPERATIONS PROGRAM

APPROVALS AND REVIEW

Andre’ Clemons
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SAFETY MANUAL

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<tr>
<th>ORIGINAL:</th>
<th>November 10, 2004</th>
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PREFACE

Linear Controls, Inc. Safety and Health Manual provides employees and contractors with the basic safety operating guidelines and rules to be used in their daily activities.

The need to prevent unsafe acts and conditions is a business reality that is specific to each department and individual person. Each of us must examine our workplace for hazards and communicate this to management. We must remember that our actions can affect other employees, the public and the environment.

The pro-active approach to accidental losses will demonstrate our ability to work as a team.

Book rules and recommendations which will cover every detail under all conditions in connection with the work performed by the various groups of employees are not practical. They are, however, intended to give the fundamental principles, which must be observed in order to carry out your work. All employees shall carefully study and observe these rules and recommendations, especially those applying to their particular duties, and may be examined at any time of their knowledge of them. The rules shall be strictly enforced and ignorance thereof will not be accepted as an excuse for their violation.

This manual is not comprehensive on all safety and health practices. It provides managers and employees with the flexibility to deal with specific situations at the job site.
HEALTH, SAFETY AND ENVIRONMENT

Management Policy Statement

Linear Controls, Inc. management considers its first responsibility to be the safety and health of all its employees. In accepting this responsibility, a safety program has been established to provide a safe and healthful workplace. Management will provide the necessary resources to carry out this program and will comply with all applicable federal, state and local requirements.

Control of potential safety and health hazards and their elimination is the primary objective of Linear Controls, Inc. safety program.

Managers and supervisors at every level are accountable and will accordingly implement and enforce safety policies and safe procedures that encourage employees to remain accident-free, be on the constant alert for unsafe practices and conditions, and take action to eliminate such practices and conditions if they occur.

In turn, every employee must accept responsibility to prevent injuries to themselves and others by following the safety policies and procedures outlined in this program. In doing so, employees, families, the environment and Linear Controls, Inc. will benefit.

Linear Controls, Inc. Safety Coordinator is responsible for all safety related training records, reports and inspection activities.

All employees shall observe this policy under the direction of management and guidance of their supervisors. By doing so, this will reduce accidents and unnecessary losses, which in return, will make Linear Controls, Inc. more competitive and safeguard our jobs.

Andre´ Clemons

President
Linear Controls, Inc.
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SECTION 1: OVERVIEW

A. Scope

This manual contains basic safety practices for Linear Controls, Inc. The following general topics are covered:
- Safety policy
- Safety Organization
- General safety standards
- Work permits and related procedures
- Industrial hygiene/ health
- Mechanical safety standards

These topics include minimum safety measures for all work performed at Linear Controls, Inc. offices and field locations.

B. Purpose

This manual has been prepared to help you detect unsafe conditions, recognize and avoid unsafe acts and also to help you make safety a part of your job.

C. Responsibilities

Management Responsibilities
1) Provide all employees with a safe work environment and protective equipment.
2) Provide training.
3) Provide coaching and counseling.
4) Recognition of individuals and groups for outstanding performance.
5) Investigation of incidents for root cause and implementation of corrective action.
6) Champion safety and regulatory compliance.
7) Ensure that monthly, weekly and tailgate safety meetings are conducted.

Employee Responsibilities
1) Comply with all Linear Controls, Inc. requirements and government regulations.
2) Use the personal protective equipment provided by Management
3) Coaches and counsels other employees in safe practices
4) Give immediate, courteous and respectful feedback when a fellow employee is performing their job in an unsafe manner.
5) Accomplish preventative maintenance of all assigned equipment.
6) Practice good housekeeping and hygiene of facilities, equipment and vehicles.
7) Attend and participate in monthly safety meetings.
8) Use the Job Safety Analysis to enhance communication and prevent unsafe acts.

Safety and Training Coordinator Responsibilities
1) Provide support for all area operations.
2) Coordinate all training activities.
3) Assist management in interpretation of regulations.
4) Assist management in budget preparation for safety and regulatory compliance.
5) Investigate all incidents and accidents and write recommendation for corrective action.
6) Audit operations for compliance with Linear Controls, Inc. safety requirements and government regulations.
7) Submit required reporting requirements to appropriate organizations.

D. Verification

Performance evaluations will address employee safety awareness and attitude toward safety. The lack of employee involvement in accidents resulting in personal injury, property damage or fires does not necessarily determine that they are a safe worker. However, the absence of unsafe acts in work assignments is one indicator that an employee is practicing safe work habits.

E. Technical Assistance

Technical assistance in applying safety practices to specific situation is available through the Site Safety Coordinator, Management or Contracted Safety Consultant. If employees need assistance, contact these individuals for situations not specifically covered in the safety manual.
SECTION 2: LINEAR CONTROLS, INC. SAFETY POLICY

Linear Controls, Inc. safety policy is to conduct our business in compliance with all applicable environmental, health and safety laws and regulations and assist in the development of new laws and regulations through public comment and participation in industry associations. We shall do this with employee involvement, adherence to safe work procedures and continuous quality in training.

Linear Controls, Inc. Management accepts responsibility to provide a safe work place for our employees and to protect and maintain the quality of the environment. Our company is further committed to establish and maintain procedures for handling incidents and emergencies affecting the environment or the health and safety of our employees.

Regular and quality training is a key element in assuring that people achieve and maintain proficiency with safety. This is true for employees who have been in the same position for a long period of time and employees who are changing job positions.

We will promote environmental, health and safety concerns to our employees and encourage employees to identify and promptly communicate matters of concern to our management or staff.

Our ultimate goals are zero accidents, occupational injuries or illnesses and no harm to the environment. Ways in which in we can strive to meet these goals or improve areas of concern is through continuous improvements in our quality of training, behavioral based program, safety meetings, new hire orientations and recordkeeping. We must continually apply various mechanisms to assess risks and measure performance. This can be done by analysis of incidents, both on-site and off-site, monitoring injury rates compared to industry averages and tracking performance. The knowledge gained by this assessment can improve our working environment.

Every employee is expected to carry out the spirit as well as the intent of our policy. The active participation of all employees is required in order for Linear Controls, Inc. to adhere to standards set fourth in this policy.

Safety Policy Statement

Linear Controls, Inc. Safety Policy outlines the basic framework about how we maintain our business and measure our activities to be certain that we are working consistent with company expectations.

Andre’ Clemons
President
Linear Controls, Inc.
SECTION 3: DRUG, ALCOHOL AND CONTRABAND POLICY

Linear Controls, Inc., hereafter the “Company”, is committed to maintaining a drug-free workplace to promote both the quality of its services and the safety of its employees, its customers, and the public. Every “Company” employee is subject to the rules issued in this Controlled Substance Use & Alcohol Misuse Policy and shall follow the Policy as defined.

Every “Company” employee:
1) Is prohibited from using, possessing, selling, purchasing, manufacturing, distributing, or transferring alcoholic beverages and/or controlled substances and/or other performance impairing substances while on duty and/or on “Company” property;
2) Is prohibited from being on “Company” property and/or reporting to work or performing work with a measurable amount of alcohol and/or controlled substance and/or performance impairing substance in his/her system;
3) Is prohibited from the consumption of alcohol within four hours of the employee’s scheduled time to report for work, or within eight hours following an accident or until the employee takes a post accident alcohol test, whichever occurs first;
4) Is required to submit to an alcohol and/or drug test when directed by the “Company”; and
5) Is prohibited from tampering (adulteration and/or substitution) or attempting to tamper with any alcohol and/or drug test and/or interfering with the testing/collection process;
6) Is required to notify his/her supervisor within five calendar days of any conviction for a drug related crime;
7) Is responsible for informing his/her physician when being prescribed medication(s) that he/she is covered under the terms of this Policy. The employee shall use medically authorized drugs and/or over-the-counter medications in a manner which will not impair job performance;
8) Shall promptly report to his/her supervisor whenever he/she is prescribed and/or uses an over-the-counter medication that might cause job performance impairment.

Searches of employees and their personal effects, desks, work areas, lockers, and vehicles (while on “Company” property) may be conducted at such times and places as necessary to determine compliance with this Policy.

Violation of this Policy shall result in disciplinary action, up to and including termination, even for a first offense.

This testing program will be conducted in accordance with the standards of the U.S. Department of Transportation (DOT), 49 CFR Part 40, Procedures for Transportation Workplace Drug and Alcohol testing programs except when those standards are in conflict with this Policy or when not applicable to a Non-DOT testing program (example: custody and control form used for specimen collection). 49 CFR Part 40 procedures, which will be applied to this testing program, include, but are not limited to, use of a specimen collection/alcohol testing site with trained personnel, split specimen collection, use of a laboratory certified by the Department of Health and Human Services (DHHS or HHS), and use of a Medical Review Officer (MRO) to investigate laboratory positives.

The “Company” has adopted the following Policy regarding controlled substance use and alcohol misuse. Each “Company” employee shall read the Policy and must sign the “Employee Acknowledgement Receipt” and agree to comply with the terms of the Controlled Substance Use & Alcohol Misuse Policy as a condition of continued employment.
I. Policy Statement

Because of our concern for the safety of our employees, our property, the public and our concern about the productivity of our workforce, the “Company” has adopted a Controlled Substance Use & Alcohol Misuse Policy that is applicable to all employees. Our purpose in adopting this Policy is to further the “Company’s” objective of establishing and maintaining a work environment free from the adverse effects of drug use and alcohol misuse.

II. Prohibited Conduct

The “Company” strictly prohibits reporting to or being at work with a measurable amount of illegal drugs and/or alcohol in the body. The manufacture, distribution, dispensing, possession, sale, purchase, and/or use of drug paraphernalia, and/or a prohibited controlled substance and/or alcohol while on “Company” property or “Company” business is a violation of this Policy. Further, the unauthorized use or possession of prescription drugs or over-the-counter drugs while on “Company” property or “Company” business is a violation of the Policy. The use of any substance which causes or tends to contribute to unacceptable work performance is also prohibited.

The use of alcohol at “Company” approved functions (business meals, employee gatherings, celebration events, cocktail hours at conferences, etc.) is acceptable if (1) The activity and/or an employee’s involvement in an activity is pre-approved by the “Company” management and (2) Such consumption is done in moderation so as to protect the safety of the employee, fellow employees, clients and the public in general.

A. Illegal Drugs

The presence of a detectable amount (see table below) of an illegal drug(s) in an employee while performing “Company” business or while in a “Company” facility and/or on “Company” property is prohibited. Any employee who has a lab confirmed “positive” test for any of the foregoing drugs is in violation of this Policy, unless the employee demonstrates to the MRO a medical explanation for the presence of the drug(s) (in which case the MRO will rule the test result as “negative”).
The “Company” will test for nine controlled substances at the following levels:

<table>
<thead>
<tr>
<th>Drug</th>
<th>EMIT Test Initial</th>
<th>GC/MS Test Confirmation</th>
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<tbody>
<tr>
<td>Amphetamines</td>
<td>300 ng/ML</td>
<td>300 ng/ML</td>
</tr>
<tr>
<td>Barbiturates</td>
<td>300 ng/ML</td>
<td>100 ng/ML</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>300 ng/ML</td>
<td>100 ng/ML</td>
</tr>
<tr>
<td>Cannabinoids (Marijuana)</td>
<td>20 ng/ML</td>
<td>10 ng/ML</td>
</tr>
<tr>
<td>Cocaine</td>
<td>300 ng/ML</td>
<td>150 ng/ML</td>
</tr>
<tr>
<td>Methadone</td>
<td>300 ng/ML</td>
<td>100 ng/ML</td>
</tr>
<tr>
<td>Opiates (Heroin, etc.)</td>
<td>2000 ng/ML</td>
<td></td>
</tr>
<tr>
<td>Morphine</td>
<td></td>
<td>2000 ng/ML</td>
</tr>
<tr>
<td>Codeine</td>
<td></td>
<td>2000 ng/ML</td>
</tr>
<tr>
<td>Phencyclidine (PCP)</td>
<td>25 ng/ML</td>
<td>25 ng/ML</td>
</tr>
<tr>
<td>Propoxyphene</td>
<td>300 ng/ML</td>
<td>200 ng/ML</td>
</tr>
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</table>

The “Company” reserves the right to alter the testing panel and threshold level as substance usage and availability patterns suggest the need for change.

All specimens will also undergo validity testing. Validity testing is the evaluation of the specimen to determine if it is consistent with normal human urine. The purpose of validity testing is to determine whether certain adulterants or foreign substances were added to the urine, if the urine was diluted, or if the specimen was substituted.

B. Alcohol

Employees will be tested for alcohol with an alcohol testing device listed on the National Highway Traffic Safety Administration’s Conforming Products List. An alcohol concentration of 0.02 or greater will be considered a “positive” and is a violation of this Policy.

III. Disciplinary Action

Violation of this Policy shall result in disciplinary action, up to and including termination, even for a first offense.

IV. Searches

The “Company” may conduct unannounced searches for illegal drugs, and/or drug paraphernalia and/or alcohol at “Company” facilities, “Company” property, and/or client locations. Entering the “Company’s” property constitutes consent to searches. Employees are expected to cooperate in the conducting of such searches.
Searches of employees and their personal property which includes, but is not limited to, lunch containers, brief cases, desks, work areas, lockers, personal effects, baggage, containers, purses, wallets, parcels, and vehicles (while on “Company” property) may be conducted when there is reasonable suspicion to believe that an employee is in violation of this Policy and/or when circumstances and/or workplace conditions justify them.

Employees and contractors, by acceptance of job assignments from Linear Controls, Inc., consent to personal searches that may be required by and/or performed by Linear Controls, Inc. clients at their discretion. An employee's refusal to consent shall result in immediate termination.

No employee will be touched as part of the search or detained without his/her consent. Employees being searched may be asked to empty pockets and remove hats and outer clothing including jackets, coveralls or slickers.

Drugs discovered on “Company” property will be turned over to the appropriate law enforcement agency. Any action taken by law enforcement agencies will be completely independent of this Policy.

V. Testing

General

1) Drug and alcohol testing will be performed by an independent drug/alcohol testing service. Employees will comply with all procedures and protocols established by the independent testing service. An employee’s failure to submit to a drug and/or alcohol test or to comply with all procedures and protocols established by the independent testing service is a violation of this Policy and may result in discipline, up to and including termination.

   a) A Medical Review Officer (MRO) will review the results of the drug testing process. The primary responsibility of the MRO is to review and interpret lab positive drug test results. It is important to remember that a positive laboratory test result does not automatically identify an employee/applicant as a user of prohibited drugs. The MRO must review lab positive drug test results and determine whether any legitimate alternative medical explanation could account for the positive result.

   b) When an employee is notified to go to the collection site for a specimen collection and/or alcohol test, they will be allotted 30 minutes plus reasonable travel time to report in at the collection/testing site.

2) Drug and Alcohol Testing will be Conducted in the Following Situations

   a) Post-Offer of Employment

      All applicants who have received a conditional offer of employment will be required to submit to drug testing only (no pre-employment alcohol test will be conducted). The “Company” will withdraw the conditional offer of employment to any applicant who tests "positive" for the presence of a substance prohibited under this Policy.
b) Random (where permitted by state law)

Random testing will be applicable to all employees of the “Company”. A method of random selection will be administered by the independent testing service to ensure that an employee is selected by chance. All employees will be in the random selection pool every time a drawing is made. No employee will be excluded merely because he/she has previously been randomly selected and tested. Random testing will be conducted at an annual rate of at least 50 percent for drugs. The “Company” reserves the right to alter the random testing rate.

c) Post-Accident

When an employee’s performance either contributed to an accident or cannot be completely discounted as a contributing factor to the accident the employee will be required to submit to post-accident testing. An employee must submit to a post-accident drug and alcohol test as soon after an accident as possible, but no later than thirty-two (32) hours after an accident for drugs and no later than eight (8) hours for alcohol.

Nothing in this policy shall be construed to require the delay of necessary medical attention for injured persons following an accident or to prohibit an employee from leaving the scene of the accident for the period necessary to obtain assistance in responding to the accident, or to obtain necessary medical care.

d) Reasonable Suspicion

An employee may be tested for drugs and/or alcohol when supervisors have reason to believe that the employee may be in violation of this Policy. A decision to test will be generally based on two supervisors’ evaluation of contemporaneous physical, behavioral, or performance factors which may cause the supervisors, in the exercise of their discretion, to suspect possible drug use and/or alcohol misuse. For instance, repeated errors on the job, rule violations or unsatisfactory time and attendance patterns, or a specific contemporaneous event that indicates possible drug use and/or alcohol misuse, could provide a basis to test an employee. Alcohol testing may be conducted based solely on breath or body odor detected by one supervisor.

In all cases of reasonable suspicion testing, the “Company” shall provide transportation to and from the collection/testing site as well as to the employee’s place of residence or other mutually agreeable location should the testing outcome be positive or unknown.

In the event that the results are unknown in a reasonable suspicion testing situation, the employee will be temporarily suspended from duty with or without pay until the results are known.
e) Wall to Wall

Employees are subject to unannounced en masse drug and/or alcohol testing. Such tests will be scheduled at the sole discretion of the “Company” or in some cases, the client. The “Company” and/or client discretion includes the determination of the scope for such testing (group of employees, department(s), facilities, etc.) in addition to the timing of such testing. Such testing shall include all employees of the named group. Additionally, such group of employees may include, but is not limited to, all employees on a job site at the time of testing or employees by shift and/or craft.

f) Testing of the Split Specimen

An employee or applicant whose drug test was reported as positive by the MRO may request a test of the split specimen, if the employee submits a written request to the MRO within seventy-two (72) after being made aware of the test results. The employee or applicant must pay for the cost of the split test. If the results of the split test are “negative”, the “Company” will reimburse the individual. The split test may be conducted at the same DHHS laboratory where the specimen was initially tested or at another DHHS certified laboratory. Selection of the laboratory will be determined by the MRO with input from the employee.

VI. Employee Admission of Controlled Substance Use and/or Alcohol Misuse

A. Employees who admit to controlled substances use and/or alcohol misuse are subject to the referral, evaluation and treatment requirements of this Policy, that is; evaluation by a Substance Abuse Professional (SAP), required treatment, follow-up testing, etc.

B. An employee is not permitted to self-identify in order to avoid testing under the requirements of this Policy.

C. An employee must make an admission of alcohol misuse or controlled substances use prior to reporting for duty.

D. The employee will not be permitted to return to work until the “Company” is satisfied that the employee has been evaluated and has successfully completed education and/or treatment requirements as directed by a Substance Abuse Professional.

E. Prior to the employee returning to work, the employee shall undergo a return-to-duty test with a result indicating an alcohol concentration of less than 0.02; and/or a return-to-duty controlled substance test with a verified negative test result for controlled substances.

VII. Cost

The cost of all testing, except the testing of the split specimen (see Section V. 6.), will be paid for by the “Company”. All cost associated with a SAP evaluation and required rehabilitation are the responsibility of the employee.
VIII. Confidentiality

The “Company” will carry out this Controlled Substance Use & Alcohol Misuse Policy in a manner which respects the dignity and confidentiality of those involved.

IX. DISA

Linear Controls, Inc. employees working offshore will be required to maintain an “Active” status in the DISA Contractor Consortium (DCC) and/or Exploration and Production Contractors Consortium (EPCC).

Failure to maintain an “Active” status shall result in disciplinary action, up to and including termination, even for a first offense.

X. Definitions

*Adulterated specimen* means a specimen that contains a substance that is not expected to be present in human urine, or contains a substance expected to be present but is at a concentration so high that it is not consistent with human urine.

*Alcohol* means the intoxicating agent in beverage alcohol, ethyl alcohol, or other low molecular weight alcohol including methyl and isopropyl alcohol.

*Alcohol concentration (or content)* means the alcohol in a volume of breath expressed in terms of grams of alcohol per 210 liters of breath.

*Alcohol use* means the consumption of any beverage, mixture, or preparation, including any medication, containing alcohol. [Caution: many cough medicines contain alcohol].


*Confirmation (or confirmatory) drug test* means a second analytical procedure performed on a urine specimen to identify and quantify the presence of a specific drug or drug metabolite.

*Confirmed drug test* means a confirmation test result received by an MRO from a laboratory.

*Dilute specimen* means a specimen with creatinine and specific gravity values that are lower than expected for human urine.

*Drug* means any substance or chemical that has mind or function altering effects on the human body, including prescription and over-the-counter medications.

*Drug paraphernalia* means any item used for the administering, transferring or snorting of a drug.

*Illegal drug* means a controlled substance included in Schedule I or II, as defined by section 802(6) of Title 21 of the United States Code, the possession of which is unlawful under chapter 13 of that Title. The term "illegal drug" does not mean the use of a controlled substance pursuant to a valid prescription or other uses authorized by law.
Invalid drug test means the result of a drug test for a urine specimen that contains an unidentified adulterant or an unidentified interfering substance, has abnormal physical characteristics, or has an endogenous substance at an abnormal concentration that prevents the laboratory from completing or obtaining a valid drug test result.

Laboratory means a laboratory certified by HHS under the National Laboratory Certification Program as meeting the minimum standards of the HHS Mandatory Guidelines for Federal Workplace Drug Testing Programs. In the event of hair testing, a laboratory certified to perform hair testing.

Licensed medical practitioner means a person who is licensed, certified, and/or registered, in accordance with applicable Federal, State, local, or foreign laws and regulations, to prescribe controlled substances and other drugs.

Medical Review Officer (MRO) means a licensed physician responsible for receiving laboratory results and who is knowledgeable of controlled substance use. The MRO must have appropriate medical training to interpret and evaluate test results in conjunction with medical history and any other bio-medical information.

Possession means on one's person, in one's personal effects, in one's vehicle, or under one's control.

Primary specimen means the urine specimen bottle that is opened and tested by a first laboratory to determine whether the employee has a drug or drug metabolite in his or her system; and for the purpose of validity testing. The primary specimen is distinguished from the split specimen, defined in this section.

Refuse to submit (to an alcohol or controlled substances test) means that an employee (or applicant):

1) Fails to appear for any test (except a pre-employment test) within a reasonable time (generally 1 hour plus reasonable driving time after notification to go for a test), as determined by the “Company” after being directed to do so by the “Company”;

2) Fails to remain at the testing site until the testing process is complete. Fails to remain at the testing site for a pre-employment test occurs when an applicant leaves once the specimen collection kit has been opened;

3) Fails to provide a urine or breath specimen for any drug or alcohol test required by this Policy. An applicant who does not provide a urine specimen because he/she left the testing site before the testing process commences for a pre-employment test is not deemed to have refused to test;

4) Fails to provide a sufficient amount of urine or breath when directed, and it has been determined, through a required medical evaluation, that there was no adequate medical explanation for the failure;

5) Declines to submit a second specimen when directed to do so by the “Company” or collector. A second urine specimen is required when the first specimen is not within the acceptable temperature range. The second collection is by direct observation;

6) Fails to cooperate with any part of the testing process (e.g., refuses to empty pockets when so directed by the collector, behaves in a confrontational way that disrupts the collection process); or

7) Is reported by the MRO as having a verified adulterated or substituted test result.
Sale means any exchange, transfer, or sharing whether for money or otherwise.

Screening test (or initial test) means:

1) In drug testing, a test to eliminate “negative” urine specimens from further analysis or to identify a specimen that requires additional testing for the presence of drugs.
2) In alcohol testing, an analytical procedure to determine whether an employee may have a prohibited concentration of alcohol in a breath or saliva specimen.

Specimen means any one of several types of specimens including but not limited to urine, hair, sweat, and/or saliva. Specimens shall be collected in accordance with manufactures and/or testing laboratory instructions.

Split specimen means a part of the urine specimen that is sent to a first laboratory and retained unopened, and which is transported to a second laboratory in the event that the employee requests that it be tested following a verified positive test of the primary specimen or a verified adulterated or substituted test result.

Substance Abuse Professional (SAP) means a person who evaluates employees who have violated the drug and alcohol Policy and makes recommendations concerning education, treatment, follow-up testing, and aftercare. Must be a licensed physician (Doctor of Medicine or Osteopathy); or licensed or certified social worker; or licensed or certified psychologist; or licensed or certified employee assistance professional; or a drug and alcohol counselor certified by the National Association of Alcoholism and Drug Abuse Counselors Certification Commission (NAADAC) or by the International Certification Reciprocity Consortium/Alcohol and Other Drug Abuse (ICRC).

Substituted specimen means a specimen with creatinine and specific gravity values that are so diminished that they are not consistent with human urine.

Under the Influence shall mean that an individual is affected by alcohol in any detectable manner. Being under the influence may be established by a professional or layperson’s opinion, a physiological test/ analysis, or a biochemical test/ analysis. An “Under the Influence” determination is not limited to nor must it consist of evidence of impairment of physical or mental ability or misconduct.

Verified test means a drug test result or validity testing result from an HHS certified laboratory that has undergone review and final determination by the MRO.

Use means any form of consumption, ingestion, inhaling, or injecting.
SECTION 4: PROGRESSIVE DISCIPLINE POLICY

A. Purpose

The Progressive Discipline Policy shall provide general guidance in Linear Controls, Inc. disciplinary policy and provide clear and concise rules that must be enforced impartially to all personnel.

B. Scope

This section applies to all Linear Controls, Inc. facilities, vehicles and work sites owned or controlled by Linear Controls, Inc. described as “Premises” identified in Section 3, paragraph number one.

C. Administration

All managers are responsible for enforcing the discipline policy as outline below.

**Management/ Supervisor Responsibilities**
1) Provide all employees with a safe work environment and protective equipment
2) Audit employees and workplace for compliance with Linear Controls, Inc. policies.
3) Provide coaching and counseling for discovered violations.
4) Recognize individuals for outstanding performance.
5) Investigate all incidents for root cause and implementation of corrective action.
6) Champion safety and regulatory compliance
7) Ensure that monthly, weekly and tailgate safety meetings are conducted.

D. Verification

All management personnel shall audit facilities and offsite locations for employee commitment and view employee violations of safety procedures and objectives as violations of Linear Controls, Inc. disciplinary policy.

E. Procedures

**Disciplinary Procedure – Violation of Safety Rules**

- **First Violation** – If determined that an employee violates a published Linear Controls, Inc. safety policy, of which the employee has been made aware, he/she shall receive counseling for the first offense accompanied by retraining. Counseling shall include a discussion of the infraction and provide information on the rule or procedure that was violated and the corrective action to be taken.

- **Second Violation** – If determined that an employee violates a published Linear Controls, Inc. safety policy, of which the employee has been made aware, he/she shall receive a written warning/ reprimand and a copy of which will placed in the employee’s personal file.

- **Third Violation** – If an employee receives two (2) written warnings in one year, he/she shall be subject to suspension without pay for five working days.
• **Fourth Violation** – Any additional violations beyond what is listed above as first, second and third violations (within one (1) year of the date of the first occurrence) shall be cause for termination.

Employees terminated for just cause are not eligible for severance pay. The following are examples of just cause for discharge: (This list is not all inclusive)

- Unsatisfactory job performance
- Violation of company policy.
- Excessive absenteeism.
- Reporting late for work or excessive tardiness that interferes with job performance.
- Disregard of safety rules or practices.
- Fighting, horseplay or other disruptive activities on Linear Controls, Inc., Customer premises or while on duty.
- Refusal or failure to perform assigned work.
- Refusal to comply with written or verbal instruction of a supervisor.
- Violation of Linear Controls, Inc.’s Substance Abuse Policy and/or related safety rules.
- Possession of weapons or explosives on Linear Controls, Inc. premises, vehicles or on Customer premises.
- The use of a tool as a weapon.
- A mental or physical condition, not occupational in origin, which may constitute a hazard to the employee, fellow employees, Linear Controls, Inc. property or Customer’s property. A qualified physician shall certify such a condition.
SECTION 5: SAFETY ORGANIZATION

Andre´ Clemons
President & CEO

Dawn Quibodeaux
CFO

Susan Toups
HR Director

Randall Thomassie
Safety and Training Coordinator
SECTION 6: NEW EMPLOYEE ORIENTATION

Safety Orientation of New Employees

Introduction

The orientation of new personnel should never be viewed lightly. All employees should realize that newly hired personnel are just as important as those employees already working for Linear Controls, Inc.

Most new employees come into new jobs highly charged and wanting to do well because they do not care to suffer embarrassment in front of new colleagues. They seek acceptance as quickly as possible.

New employees will, in most cases, adopt the attitude that already exists within a company. If enthusiastic, energetic employees have already set a positive attitude toward safety, new employees will likely adopt that same attitude.

The reasons for New Employee Orientation are:

1) Safety is only accomplished through a person’s understanding and knowledge of the correct methods of doing tasks in a correct manner.
2) Safety training cannot be successfully accomplished at a work place where there is a high rate of turnover.
3) People must feel important or they will go elsewhere.
4) In order to show that Linear Controls, Inc. views all employees alike, no prejudicial and antagonistic viewpoints will be tolerated within the organization.
5) To show the new employee that his/her position is important and that he/she will have specific jobs functions.
6) New employees learn by asking questions.

The orientation process is required as part of the Emergency Response Plan.

New Employee Orientation Objectives:

1) Make the new employee realize that he/she has something to contribute and that this is a career opportunity, not just a job.
2) Introduction to the equipment the new employee will be working with and orientation to the duties he/she is expected to perform.
3) Make the new employee fully aware of operating practices, safety regulations and requirements (i.e., LOTO, JSA’s, etc.).

Procedures

1) All non-administrative personnel shall complete a pre-employment general physical as part of the hiring process.
   a. Fill out the second injury fund questionnaire.
2) The Safety Coordinator shall explain the company drug and alcohol policy.
   a. Pre-Employment Testing
   b. Post-Accident Testing
c. Random Testing (Company and Client)

3) Upon arrival at the work site, the Safety Coordinator and/or supervisor will accompany the new employee on a tour of the facility and make the new employee aware of:
   a. All appropriate supervisors.
   b. Safety equipment and signs.
   c. The layout of the facility and related equipment.
   d. The function of various facility components, if the person is inexperienced.
   e. The duties of the new employee, where they are expected to work and a thorough explanation of related tools, equipment and any health hazards that might be associated with the job.
   f. At the time of employment and no less than yearly thereafter, the employee will be informed of the existence, availability and location of any records pertaining to his/her employment, medical surveillance plan and possible health hazard exposures.
   g. Emergency alarms, escape exits, fire fighting equipment and emergency procedures.

4) Once the new employee is ready to start his/her assigned duties, the Supervisor will:
   a. Explain and show how the employee is to do the work.
   b. Repeat the procedures as often as necessary or as long as an effort is being made to learn. Patience should be exercised so as not to discourage the person.
   c. Compliment and encourage the person with each step of progress.
   d. Periodically, as time progresses, review the progress being made by the employee. Point out strong and weak areas of his/her work, making him/her aware that his/her performance is being monitored and that a performance appraisal will be compiled.
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1. GENERAL SAFETY RULES, POLICIES AND PROCEDURES

Introduction

The primary responsibility of all employees is to perform their duties in a safe manner to prevent injury to themselves or to their co-workers. Employees should become familiar with the contents of this safety manual and learn the approved safe practices applicable to their work and observe these practices at all times. Before employees begin any unfamiliar operation or operate any equipment, they shall review the appropriate section of this manual in detail. Each employee shall maintain an active interest in the safety program. Each work group is expected to actively participate in the safety program. 

**Attendance at scheduled and impromptu meetings is mandatory.** Employees are expected to give their undivided attention to the on-the-job safety discussion, which your supervisor may use to prepare you for new or hazardous work. Employees should ask for an explanation of a particular subject matter if they do not understand thoroughly. Failure to observe applicable safety rules could result in serious injury to you or a fellow employee. For this reason, unsafe work practices will result in discipline up to and including termination.

Company Policy

1) The use, possession, transportation and/or sale of illegal drugs by any employee while on premises owned or operated, leased or rented, chartered, controlled, provided, furnished or contracted to work on is absolutely forbidden. The work “premises” as used above, includes all lands, properties, buildings, structures, installations, boats, vessels, aircraft, automobiles, trucks and vans, including those personal vehicles owned by employees when operating expenses are billed to Linear Controls, Inc., (or any other mode of transportation.) Prescription drugs, which could impair motor functions, are not to be taken shortly before or during working hours. Employees with prescriptions of this type are required to advise the appropriate Supervisor or manager when first reporting to work after receiving such a prescription.

2) Under no circumstances shall any employee consume, posses, transport and/or sell alcoholic beverages while on said “premises” as described in “1” above. Under no circumstances shall any employee, while wearing clothing or headgear bearing Linear Controls, Inc. name or logo, or while driving a vehicle owned or leased by Linear Controls, Inc. visit an establishment whose primary business is the sale and/or consumption of alcoholic beverages.

3) The use and or possession of any firearms by any employee while on said “premises”, as described in “a” above, is not condoned or allowed. Those who violate this provision will be subject to disciplinary action, which may include immediate discharge.

4) Employees who violate these policies will be immediately removed from the premises and will be subject to disciplinary action, which may include immediate discharge. Further, if laws or statutes have been violated, such violations will be reported to the appropriate law enforcement agencies.

5) Linear Controls, Inc. reserves the right to, but is not limited in its recourse to carry out reasonable searches of individuals and personal effects of any person who enters onto, remains in or upon, or who may be leaving said “premises” as described in “a” above. These searches may be initiated by Linear Controls, Inc. without prior
announcement and will be conducted at such times and locations as it may deem appropriate. Refusal by an employee to permit such search will be cause for denying that employee access to said “premises” or may result in his/her removal from said “premises.”

6) Linear Controls, Inc. reserves the right to conduct drug and alcohol testing of its employees and contract employee. Any employee who refuses to participate, without satisfactory explanation, will be subject to immediate discharge without benefits. Random testing may be done on any day. All employees have the right to obtain a secondary test at their own expense if any question should arise.

7) Employee behaviors should be monitored to determine if an employee engaged in irregular activities should be removed from the work site.

8) Fighting in the work place and/or while on duty is STRICTLY FORBIDDEN.

9) Horseplay, practical jokes and other unsafe acts are forbidden in the workplace or work area.

10) Abuse or destruction of any company property is STRICTLY FORBIDDEN.

11) Smoking is allowed only in designated smoking areas. Check with your supervisor or the person in charge of the facility as to proper locations in which to smoke.

12) Report ALL injuries, accidents or incidents to your supervisor immediately.

13) Obey ALL warning signs.

14) Consumption of energy drinks while at work is strictly prohibited. This applies to all employees, facilities and customer work locations.

15) Employees are responsible for showing up for work on time and ensuring they are physically and mentally fit to perform their job functions safely. Employees must take responsibility for their own safety as well as not reporting to work in a condition as to endanger the safety of their fellow workers. Employees are responsible for notifying their supervisor if they are fatigued to the point of not being able to perform their duties safely.

**Prescription Medication**

Linear Controls Inc. requires all employee(s) subject to company and/or client initiated drug testing, who work offshore or on land, and may work on or around heavy machinery taking a legally prescribed medication(s) that may indicate a positive test result on a drug screen, must notify Linear Controls Inc. using the following guidelines prior to arriving at any Linear Controls facility, client facility, dock or heliport and beginning work.

Written authorization from the prescribing physician on legal letterhead or prescription pad, including the following:
- Name of Medication
- Reason for the medication
- How long you will be on this medication
- Physician’s statement indicating you can safely work in an offshore or on-land environment, with and around heavy machinery while taking this medication.

This information must be on file with Linear Controls Inc. and a copy kept with you at all times.

If you a taking a legal prescription medication and test positive on a confirmed drug test result or on-site quick-test, you WILL NOT be allowed to begin work or if currently working, you will be removed from duty if you cannot produce the above prescribed
documentation. You will not be allowed to return to work until Linear Controls Inc. has been contacted by the Medical Review Officer. The time away from work will be considered an unexcused absence and will be without pay.

**Stop Work Authority**

Employees are responsible to initiate a Stop Work Intervention when warranted and management is responsible to create a culture where Stop Work Authority is exercised freely. Stop Work Interventions should be documented on company observation cards (HERO Program), reviewed by supervision, and follow up to ensure that the identified safety concern(s) have been addressed to the satisfaction of all involved persons prior to the resumption of work.

All employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of HSE risk exist. No work will resume until all stop work issues and concerns have been adequately addressed. Any form of retribution or intimidation directed at any individual or client for exercising their authority will not be tolerated.

The steps to the Stop Work Authority process include:

1) Stop – when an unsafe condition is identified, the Stop Work Intervention will be initiated, coordinated through the supervisor, and initiated in a positive manner.
2) Notify all affected personnel and supervision of the stop work issue
3) Correct the issue.
4) Resume work when safe to do so.

Employees must receive Stop Work Authority training before initial assignment. The training must be documented.

**Accident Reporting Requirements**

All incidents (Near Miss, First Aid Incidents, Recordable Incidents, Property Damage, Environmental Incidents, Vehicle and Fire) must be immediately reported to the Safety Coordinator.

- If an incident occurs on a client location/facility, the appropriate client representative must be notified.

All injuries, no matter how slight, must be reported to the Safety Coordinator immediately. The Safety Coordinator will inform appropriate company personnel.

- In the event an accident/injury occurs on a client location/facility, the Safety Coordinator will contact the appropriate client representative to inform them of the accident/injury.

All injuries, which occur during the course of employment, must be reported on the Incident/Injury Report Form. The Supervisor must sign this form and enough information should be given to clearly explain what happened. There must be enough information provided to complete the required OSHA 300 Form.

Accidents which prevent the employee from returning to work on his next scheduled work day shall be reported as Lost-time accidents, and the number of days lost must be reported to the home office on the employees return to work.
In cases of death from any cause or serious injury, the Safety Coordinator shall be notified immediately. Any special documents that may be required by governmental authorities will be promptly filled out and processed according to their instructions.

**Near Miss Accident Reporting**

A near miss is an unplanned, unexpected occurrence that interferes with or interrupts the orderly progress of work or has the potential to cause personal injury or dollar loss through property damage. A near miss does not have to result in injury or damage.

Employees shall report all near miss incidents to their supervisor as soon as possible following the incident. They also need to be reported during safety meetings. Supervisors should review all near miss incidents. Investigations should be documented. Recommendations to prevent recurrence shall be included in the review.

Near miss documentation shall be forwarded to the Safety Coordinator who will disseminate the information.

**Disciplinary Procedures – Violation of Safety Rules**

1) **First Violation** – If determined that an employee violates a published Linear Controls, Inc. safety policy, of which the employee has been made aware, he/she shall receive counseling for the first offense accompanied by retraining.

2) **Second Violation** – If determined that an employee violates a published Linear Controls, Inc. safety policy, of which the employee has been made aware, he/she shall receive a written warning/reprimand and a copy of which will placed in the employee’s personal file.

3) **Third Violation** – If an employee receives two (2) written warnings in one year, he/she shall be subject to suspension without pay for five working days.

4) **Fourth Violation** – Any additional violations beyond what is listed above as first, second and third violations (within one (1) year of the date of the first occurrence) shall be cause for termination.

**Introduction to Safety Policies**

Linear Controls, Inc. is vitally concerned in the SAFETY of its employees and proper use of equipment in all phases of its operation. As a result, the safety manual is designed to assist you, the employee, in knowing and complying with good safety practices in your daily work activities. Your knowledge and routine observance of good safety practices will result in an accident free work place.

We believe that safety is everyone’s responsibility and the practices and procedures set forth in the safety manual should become a part of our daily work practices.

All Linear Controls, Inc. employees are required to attend and participate in scheduled and impromptu Safety Meetings. Talk alone does not produce accident free results, it requires ACTION from everyone. Employees are responsible to learn from these meetings and implement what is learned into daily work habits. The responsibility for
safety and accident prevention lies with everyone in the organization. The Safety Manual alone will not prevent accidents and resulting injuries to you.

**ONLY YOU CAN PREVENT ACCIDENTS AND INJURIES!**

The Management and Supervisors of Linear Controls, Inc. are counting on YOU to perform your work in the safest manner by observing all safety rules.

Linear Controls, Inc. has an obligation to protect all employees from harm while they are employed. YOU, as an employee, have an obligation to Linear Controls, Inc., your fellow employees and yourself to follow the rules and regulations that are in place. If it is determined by an accident review or if an employee is observed violating a safety rule, (i.e. not following verbal or written safety procedures, guidelines, rules, horse play, failure to wear selected PPE, abuse of selected PPE, etc.) he/she will receive a verbal warning. The second violation will result in a written warning with a copy placed in the employee’s personal folder. If the employee receives two written warnings in one (1) year, he/she is subject to suspension without pay for five (5) working days. The employee will lose all rights to Safety Awards. Further violations may result in termination. An employee is subject to termination if he/she willfully violates any safety rule.

**General Safety Rules**

Think before you act. Follow instructions. Do not take chances.

If you don’t know…ASK.

1) Correct and/or report ALL unsafe conditions immediately.
2) Help keep everything, especially your work area, clean and orderly.
3) Use the right tool or equipment for the job. Use them safely. Keep tools and equipment in good condition.
4) Report ALL injuries, accidents and/or incidents, no matter how minor, to your supervisor immediately.
5) Use and adjust only the tools, machines and equipment that you have been trained on and authorized to use.
6) Use prescribed safety equipment and personal protective equipment that is in good condition.
7) Use proper lifting techniques. If the load is too heavy or awkward, get help or use mechanical lifting equipment.
8) Exercise additional precaution on wet or slippery surfaces and when changing levels.
9) Read labels before you use chemicals and other substances and follow the directions. Refer to the Material Safety Data Sheet.
10) Use hazardous energy control procedures when dealing with any energy source that could cause accidents.
11) Adequate rest, exercise and proper diet will enhance employee health and level of awareness, which is helpful in avoiding accidental injury.
12) Be alert to hazardous conditions. Whenever possible, correct or eliminate the hazardous condition yourself. Report to your supervisor all hazards and the measures you have taken to correct them. Documentation shall describe the hazard and give its location. Responsibility for remedial action shall be assigned. If a hazard cannot be corrected immediately, clearly mark the hazard until it can be
corrected. Personnel coming on duty must be informed of any changes or conditions that might present a hazard.

13) Employees are responsible to initiate a “stop work” intervention when warranted and support the intervention of others.

14) Look out for the other person whose actions might cause accidents.

15) Employees must report promptly to their supervisor any injury they sustain while at work. Employees must report all Linear Controls, Inc. owned, leased or rented vehicle and/or job related automotive accidents, major or minor, as soon as possible to their supervisor.

16) Employees must report all accidents details that did not result in personal injury or property damage, but could do so if it should occur again.

17) Never report to work or drive a vehicle when alcohol or drugs may impair your ability to safely perform your duties.

18) The introduction, possession, or use of intoxicating beverages, illegal drugs, drug-related paraphernalia, narcotics, firearms, explosives, weapons, or other hazardous substances is strictly prohibited on Linear Controls, Inc. property and/or customer property.

19) Employees must inform their supervisor if they are on prescribed medication that could affect their ability to perform their work. Any medical information that may be useful during a medical emergency should also be reported to their supervisor.

20) When working alone, notify another person of your work location and always try to anticipate any hazards that you might encounter. Employees shall not attempt to do a job alone when safe working practices and common sense tell them assistance is needed. Use the “buddy system” whenever possible. Always report your safe return from remote locations to your supervisor each day.

21) Never attempt to lift or move a heavy object that is beyond your capability to do so in a safe manner.

22) Use the prescribed protective equipment for the work you are doing. Refer to the proper Material Safety Data Sheets and your supervisor.

23) Never defeat the function of a safety device. Report all safety device malfunctions to your supervisor as soon as possible and flag the device immediately to warn other personnel of the hazard. Safety devices shall be periodically tested for proper operation.

24) Before placing equipment back into service, ensure that all associated safety devices are operational.

25) Preoccupation with matters other than the work at hand causes accidents. When performing a job, concentrate on the immediate assignment. Do not be distracted by your emotions or by outside influences. When necessary, arrange for personal time off with your supervisor.

26) Do not use makeshifts of any kind that could conceivably compromise your safety or the safety of others. In rare instances when a makeshift is necessary as a temporary measure, obtain the approval of your supervisor to use it, then replace or correct it with the appropriate equipment or procedure as soon as possible. While using the makeshift, mark it so that others will be aware of it. As an extra precaution, notify relief and other personnel that it exists.

27) Be careful when moving about the work area. Be aware of slip, trip and fall hazards. Be especially careful when weather or other conditions create or aggravate hazardous situations.

See section on slips, trips and falls.
28) Never engage in scuffling, practical joking or horseplay on the job.
29) Individuals responsible for selecting meeting locations must ensure that the facilities meet expected safety standards. The person in charge should explain the evacuation plan and point out the emergency exits before the meeting begins.
30) When on a business trip, employees should become familiar with all emergency procedures and escape routes at the work locations and the hotel or motel.

**Safe Lifting and Back Injury Prevention**

1) Before manual lifting is performed, employees should assess the lift for size, bulk, weight, if manual/mechanical lifting equipment is required, if two-man lift is required, clear line of sight and path while carrying object.
   a. Employees shall be trained on safe lifting techniques
   b. Injuries caused by improper lifting must be reported, investigated and documented/recorded.
2) Manual lifting equipment (i.e., dollies, hand trucks, carts, forklifts, etc.,) are provided for employee use and should be utilized when possible.
   a. Use of provided manual lifting equipment by employees must be enforced.
   b. Where use of lifting equipment is impractical or not possible, two-man lifts must be used.
3) Work areas should be periodically evaluated to assess the potential for and prevention of injuries.

**Slips, Trips and Falls**

Slips, trips and falls are a major contributor to back injuries and lost time accidents. Be careful and observe the following rules:

1) The following situations shall be avoided to help prevent slipping:
   a. Wet floors/decks
   b. Oily floors/decks
   c. Highly waxed and polished floors
   d. Throw rugs at the foot or top of a stairway and entrances to hallways
   e. Items such as paper clips, thumbtacks and rubber bands on the floor
2) Good traction helps prevent slipping. The soles of some shoes may increase the chance of slipping; therefore, wear shoes that provide good traction.
3) Do not exert extreme force on wrenches and make sure that your footing is stable in case the wrench slips or releases quickly.
4) Good housekeeping helps prevent slips, trips and falls.
5) In addition to tools used in day-to-day operations, many items can cause tripping. Be alert for tripping hazards such as garden hoses, shovels, “yo-yo’s”, rakes, concrete bumpers in parking lots, broken sidewalks, shallow holes in streets and crosswalks, extension cords, loose shoe laces, pants that are too long, etc. Take action to reduce and/or eliminate tripping hazards where possible.
6) Never run unless the situation is life threatening, and do so with extreme caution.
7) Every opening in a deck, a floor or the ground, and pits, which a person could accidentally step into, should be well marked. The openings should be constantly attended, protected by barricades or standard railings, or roped off before any grating or boards are removed or before any holes are opened.
8) Avoid working in a location without handrails.
9) Employees must wear personal fall arrest equipment which consists of a lanyard, tie off point (anchorage), body harness, deceleration device and connectors when working **six (6) feet** or more above the ground, unless other adequate fall protection systems are provided.

10) Employees must receive Linear Controls, Inc. approved training in proper use of fall protection equipment before use.

**Stairs and Walkways**

1) Employees should **always keep one hand free** to use handrails as they go up and down stairways, even when carrying tools or materials.

2) Stairs to attic areas must be equipped with adequate railings meeting OSHA standards. All stairways should be well illuminated.

3) All steps, walkways and stairs must be kept free of obstructions and slippery materials such as oil and grease.

4) Tools, equipment and material must not be left on walkways.

5) Use handrails when walking up/down stairways or steps.

6) Wooden walkways and handrails should be inspected frequently to determine their strength and integrity.

7) The use of colors to mark elevation changes is encouraged.

8) Secure hoses and electrical cords to the floor or ground whenever they are laid across walkways.

9) During winter, be careful of icy walkways. Keep hands free and out of pockets while traversing them. Use de-icing material where possible.

**Heat Illness Prevention**

1) Employees shall have access to potable drinking water.
   a. Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity throughout the work shift.

2) Employees suffering from heat illness or believing a preventative recovery period is needed, shall be provided access to an area with shade that is either open to air or provided with ventilation or cooling.
   a. Such access to shade shall be permitted at all times.

3) Supervisors must receive training in the prevention of heat related illnesses prior to supervising employees working in heat.
   a. Must be aware of procedures to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.
   b. Must ensure personal factors that contribute to heat related illness are taken into consideration before assigning a task where there is a possibility of a heat-related illness occurring (i.e., age, weight, etc.).

4) Procedures must be in place to control the effects of environmental factors that can contribute to heat related illness.
   a. The most common environmental factors are air temperature, humidity, radiant heat sources and air circulation.

5) Physical factors that contribute to heat related illness should be taken into consideration before performing a task.
   a. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, and clothing color, weight and breathability.
General Vehicle and Driving Safety

1) All operators of Linear Controls, Inc. vehicles, known as “Company Vehicles,” must possess a valid operator's license.
   a. Drivers should be appropriately assessed, licensed, and trained to operate the vehicle.
2) Only authorized employees will drive a motor vehicle in the course and scope of work or operate a company-owned vehicle.
3) Drivers shall not operate a motor vehicle while under the influence of alcohol, illegal drugs, or prescription or over-the-counter medications that might impair their driving skills.
4) The certificate of registration and proof of insurance must be carried in each Company Vehicle at all times.
5) All drivers of Company Vehicles shall be familiar with and abide ALL State, Federal and Local laws and regulations.
6) Company vehicles shall be maintained in safe working order.
7) Equipment on all Company Vehicles must conform to State and Federal regulations.
8) Picking up “hitchhikers” is absolutely forbidden.
9) Any vehicle accident or incident in a Company Vehicle shall be reported to the employee's Supervisor or project manager immediately. Any traffic citations/tickets issued to an employee while operating a Company Vehicle shall be reported to the employee's Supervisor. Supervisors/project managers shall report all incidents to the Safety Coordinator within 24 hours. An incident is defined as “any event that causes property damage or injury for which the Linear Controls, Inc. driver is involved or any occurrence that causes the Linear Controls, Inc. driver to be issued a moving violation, traffic citation/ticket.” The States' record of Linear Controls, Inc. drivers will be checked on a periodic basis to insure compliance with this safety directive.
10) The driver and all passengers of a Company Vehicle shall wear lap belts, shoulder belts and/or combinations of the two, as required by law at all times when a vehicle is in motion.
11) Authorized drivers will follow safe driving practices. Unsafe and discourteous driving practices such as, but not limited to, use of a cell phone while driving, manipulating radios or other equipment which may cause distraction, road hogging, tailgating, speeding, violating traffic regulations and any other reckless operation will not be tolerated and will be subject to disciplinary action.
12) Loads shall be secure and shall not exceed the manufacturer's specifications and legal limits for the vehicle.
13) The full time, personal use of Linear Controls, Inc. owned/leased vehicle is prohibited. Only limited personal use, as defined in the Internal Revenue Service Code is allowed.
14) Vehicles shall be used for its intended purpose.

Company Vehicle Driver Accountability

The following is disciplinary action resulting from failure to operate a Company owned/leased Vehicle in accordance with corporate policy. An “incident” is defined as any event which cause property damage or injury for which the Linear Controls, Inc. driver is “at fault,” as determined by internal or external investigating authorities, or any occurrence which causes the Linear Controls, Inc. driver to be issued a moving violation/traffic citation/ticket.
• **First Incident** – If it is determined that an employee violates a published Company Driving Policy, of which the employee has been made aware or receives a moving violation/ticket, he/she shall receive a written warning/reprimand (a copy of which shall remain in the employee’s personal file.)

• **Second Incident** – If an employee receives two (2) written warnings in one (1) year, he/she shall be subject to suspension without pay for five (5) working days.

• **Third Incident** – Any additional violations beyond those listed above as first and second violations (within one (1) year of the date of the first occurrence) shall be cause for termination.

**General Waste Management**

Personnel should estimate the waste that will be generated prior to beginning work so that the need for containers and waste removal, if necessary, can be determined.

Scrap metals that are often generated from the manufacturing of products shall be placed in provided recycle metal bins.

- Employees are encouraged to properly segregate waste materials to ensure opportunities for re-use and/or recycling.

Waste materials should be properly stored and handled to minimize the potential for a spill or impact to the environment.

- During outdoor activities, receptacles must be covered to prevent dispersion of waste materials and to control the potential for run-off.

Employees should be aware of the proper disposal method for wastes.

- This may include general instruction on disposal of non-hazardous wastes, trash, or scrap materials.
- If wastes generated are classified as hazardous, employees should be trained to ensure proper disposal.
- If personnel are not aware of the proper disposal method, they should seek assistance from their supervisor and/or Safety Coordinator.

**Supervisory Responsibilities**

1) Supervisors or other representatives in charge are responsible for understanding the conditions of the job. They must ensure that employees obey the safety rules.

2) The supervisor should ensure that all additions, removals or equipment repairs are in accordance with the approved standards/regulations and applicable codes.

3) Supervisors shall hold daily safety/work briefings. Prior to the day’s work, hazardous work or a new type of operation is about to be undertaken, the supervisor shall hold briefings to review safety procedures and give the work group an opportunity to make suggestions. A written record of the proceedings and attendance shall be kept.

4) In those areas where an inherent hazard exists and cannot be eliminated, the supervisor is responsible for familiarizing the work group with the situation and developing a means of coping with it.
5) For special operations, a supervisor may have prescribed authority to make exceptions to the normal safety rules. The supervisor shall understand authority limitations and obtain any required approvals from a higher level of supervision before beginning the operation.

6) Supervisors shall inform all employees under their supervision that accidents of any nature are to be reported to their supervisor as soon as possible on the same date of the occurrence. Supervisors in turn will ensure that the appropriate lines of communications have been properly handled. Management must be notified immediately in the event of a fatality, serious accident/incident, lost work time injury or a potential lost work time injury.

7) Supervisors are to maintain a safe working environment by monitoring and enforcing Linear Controls, Inc. safety rules and procedures.

**Contractor Responsibilities**

1) Contractors are solely responsible for the safety of their employees while working.

2) Contractors are responsible for developing and training their employees in procedures to ensure safe operations.

3) Contractors are fully responsible for providing their employees with all necessary protective and safety equipment. They must also ensure that their employees are familiar with the proper use of the equipment.

4) Contractors must abide by all applicable laws and regulations including those of the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA) and the Department of Environmental Quality (DEQ).

5) Contractors must ensure that all machinery and equipment they provide is maintained in safe operating condition and inspected regularly to ensure safe and continued operation.

**Employee Representative Responsibilities**

1) Employee representatives on location are responsible for obtaining confirmation that a contractor has adopted safety practices equivalent to those applicable to Linear Controls, Inc. employees.

2) Employee representatives aware of situations where safety has been compromised must immediately notify appropriate contract supervisors of the problem and then follow up to ensure that appropriate action has been taken to rectify the situation.

3) Employee representatives are responsible for reporting and investigating accidents involving contract personnel.

4) Employees observing unsafe practices on Linear Controls, Inc. property or customer worksite should immediately report the incident to the responsible employee representative on location.

5) Linear Controls, Inc. is responsible for ensuring that contractors receive Material Safety Data Sheets for all hazardous chemicals they work with or may encounter and are informed of the chemical hazards and safety procedures, including emergency response.
2. PERSONAL PROTECTIVE EQUIPMENT

Purpose

Personal protective equipment, or PPE, when properly worn, is designed to reduce or eliminate hazards from the work environment that cannot be controlled by other means.

PPE is considered the last barrier of protection for the employee.
- Other means of protecting employees must be pursued first.
- Linear Controls, Inc. is required by law (OSHA 29 CFR 1910.132) to provide Personal Protective Equipment and train their employees in its use, to protect them from hazards in the work environment.

Scope

This section applies to all Company facilities, vehicles and work sites controlled by Linear Controls, Inc. The information is directed to all employees and contractors.

This procedure is intended to provide employees with the necessary protective equipment to guard against hazards in the workplace and enhance on-the-job safety.
- It furnishes the employee direction on the selection, use, and care of protective equipment for eyes, face, skin, head, and feet.
- The company provides this equipment at no cost to the employee.
- PPE not designated herein and required by a specific job task or customer requisite, shall be provided by the company.
- Employees traveling to active customer sites, which are not regularly assigned to field operations, shall also be covered by this procedure.

Responsibilities

Management is responsible for ensuring that employees have completed the training required by this procedure and the documentation of this process.

Additional responsibilities include:
1) To ensure that employees have been issued and use the designated PPE required to complete their job.
2) Assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, Linear Controls, Inc. shall:
   a. Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment.
   b. Communicate selection decisions to each affected employee.
   c. Select PPE that properly fits each affected employee.
3) Verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.
General Guidelines and Requirements

Employees shall be provided at no cost suitable fitting PPE.
- The need and types of PPE selected by the company was determined by a written Hazard Assessment.
- This equipment is required by hazards of processes or environment to protect body parts from inhalation, ingestion, absorption, or physical contact.
- The selection of equipment and reasons for the selection of the equipment will be conveyed to the employees at the time it is issued and reinforced in the training.

Employees are required to use the PPE and properly maintain it in a sanitary and reliable condition.

All selected equipment will be fitted to each affected employee.

Fitting includes:
1) Proper donning
2) Doffing
3) Cleaning
4) Maintenance

Selection of PPE

The following guidelines should be considered when selecting PPE:
1) Consider the route of entry and the ability of the PPE to act as a barrier.
   a. Always reference the manufacturer’s data on chemical resistance including permeability and degradation.
2) Match the equipment to the job.
   a. Evaluate dexterity, heat, size, and other comfort issues relating to the worker and job.
   b. Insure equipment properly fits the employee.
3) Review of equipment durability such as tear resistance and seam strength.
4) Inspection and maintenance of equipment prior to use including proper cleaning and storing of PPE.
5) Replacing worn or damaged equipment.
6) Review the effects of PPE in relation to heat stress and task duration.
7) Comfort and job interference.
8) Establish controls so that substitutions aren't made without proper review, and that the correct equipment is issued to employees.

Personnel may use their own personal protective equipment as long as it is the same type that is recommended by the company.
- It will be the responsibility of the Safety Coordinator to assure the proper use, adequacy, maintenance, and sanitation of the employee owned equipment.
- This equipment will be subject to all company inspections and must be maintained in the same mechanical and sanitary condition as any other PPE.

At the time that the PPE equipment is issued to the employee the Safety Coordinator will:
1) Fit the equipment to the employee.
2) Issuing the PPE shall include:
   a. Proper donning
   b. Proper doffing
   c. Cleaning
   d. Maintenance

**Personal Protective Equipment Maintenance**

Company personnel are responsible for the keeping PPE equipment sanitary and properly maintained.
- Any damaged PPE will be repaired or replaced as soon as it is detected.
- All PPE being sent on an assignment will be inspected for proper preventative maintenance.
- All damaged or dirty PPE will not be used until it is repaired, and/or cleaned.
  - In the event that the PPE is not repairable it will be replaced.

**Use of PPE**

Proper use of PPE is critical to providing protection for employees.
- PPE should be used when other controls are not feasible or do not reduce the hazard to an acceptable level, or as an interim measure while other controls are being implemented.
- The proper type of PPE must be used.

**Guidelines for Care of PPE**

All personal protective equipment shall be cleaned, maintained, and stored in a sanitary and reliable condition.
- This equipment will be cared for in a manner required by reasons of process or environment to protect body parts from inhalation, ingestion, absorption, or physical contact.
  - This will prevent damage to the equipment
- Periodically inspections of the equipment will be conducted to identify signs of damage or wear.
- PPE shall not be modified or altered in any way that degrades the integrity of the equipment.
- The manufacturer's guidelines for use and care shall be followed.

**Eye and Face Protection**

Safety glasses with side shields are required for any work that has the potential for flying objects or foreign objects impacting the eyes.

Chemical goggles are required for any work with the potential for chemical splashes or splatters, or when working with irritating mists or vapors.

Face shields shall be worn where there is the potential for flying particles, sparks, electrical arc blast, impact to the face, or chemical splashes.
Contact lenses may be worn safely under a variety of environmental situations, with appropriate safety eye wear.

1) They do not provide impact protection, and in certain circumstances, may cause irritation such as exposure to hydrogen sulfide.
2) Use of contact lenses does not relieve the employee from wearing proper eye protection!
3) When using contact lenses, the employee should also carry extra prescription safety eyeglasses at all times.

The company shall provide affected employees with the necessary eye and face protection.

Employees that wear prescription corrective lenses must wear eye protection that incorporates the prescription in the design, or wear eye protection that can be worn over the prescription lenses.

There are three different types of eye and face protection:

1) Safety glasses with side shields
   a. Safety glasses with side shields are primarily designed to protect against flying objects and provide impact protection.
   b. Many styles also offer UV radiation protection.
   c. All safety glasses must carry the imprint, “ANSI Z87.1”, or the local regulatory approval.
2) Goggles
   a. Goggles, depending on the design, can protect a worker from flying particles, chemical splashes, or vapors and fumes.
3) Face Shields
   a. A face shield is designed to protect the face and is not a primary form of eye protection.
   b. Safety glasses or goggles must be worn underneath the face shield to protect the eyes.
   c. Face shields can be used in conjunction with goggles or safety glasses for maximum splash or impact protection.
   d. When necessary, they can be mounted onto a hard hat for combined face and head protection.

When selecting eye protection consider the following factors:

1) Impact protection.
   a. Any process that generates or has the potential to generate flying particles will require safety glasses with side shields or goggles.
2) Splash protection
   a. Processes with very little splash potential may only require goggles, which are indirectly vented.
   b. Processes that have the potential for large splashes would require a face shield in addition to the goggles.
3) Fog free or Non-Fog free lens
   a. If a worker is required to wear goggles or safety glasses for an extended period of time or in a hot and humid environment the potential for fogging increases.
   b. This decreases visibility and can be a safety hazard itself.
c. Fog free lenses decrease fogging and should be selected if these conditions exist.

**Care and Use of Eye and Face Protection**

Routinely clean lenses throughout the day to insure maximum visibility.

The glasses should be adjustable or sized for comfort.

Store eye and face protection in areas free of contaminants.
- Eye or face protection with heavily scratched lenses or broken parts should be discarded and replaced.

**Head Protection**

Protective helmets, better known as "hard hats", provide limited head protection. Hard hats are designed to reduce the force of impact and resist penetration by a falling object or projectile.

Some hard hats are also designed to provide protection of electrical shock from exposed electrical conductors and / or from lateral projectiles.

Employees are required to wear hard hats at all construction sites, offshore facilities, and while in process or manufacturing plants.

Hard hats are also required whenever there is the potential to be struck in the head by a falling object, contact with the head on stationary piping or equipment, or electrical shock from exposed energized electrical circuits.
- The company shall provide each affected employee with the proper head protection.
- Type II, Class E, head protection is now the approved head protection.

The following are descriptions of the electrical insulation protection of head protection.
- **Class C** helmets are not tested for electrical resistance.
  - They are classified as conductive helmets and provide no protection from electrical conductors.
  - This class of helmet shall not be purchased or worn by any employee!
- **Class E**, (formerly Class B) - these helmets are intended to reduce the danger of exposure to exposed high-voltage conductors.
  - These are proof tested to 20,000 volts.
  - This is the approved class of helmet.
- **Class G**, (formerly Class A) - these helmets are intended to reduce the danger of exposure to exposed low-voltage electrical conductors.
  - These are proof tested to 2,200 volts.

**Care and Use of Head Protection**

Always follow the manufacturer's recommended guidelines.
Employees are required to periodically inspect their head protection and use it in the manner for which it is designed.

For maximum protection, hard hats must securely fit on the head and the headband must be adjusted to a snug fit.

Limited retention is provided when used with a chin strap.

Hard hats are not designed for fall protection or as a vehicular or sports protective helmet.

Abuse, heat, cold, sunlight, and chemical exposure can affect the helmet's useful life.

**Inspection and Replacement**

- Check for loss of flexibility, cracks, breaks, frayed straps, or damaged stitching.
- Replace suspension if damaged in any way.
- Visually inspect the shell of the helmet for breakage, cracks, craze pattern, discoloration, brittleness, gouges, or any other unusual condition.
- Replace the helmet if found to be damaged, or at least every 5 years.

**Other Precautions**

Do not store or leave a hard hat under the rear window of an automobile.
- Sunlight and extreme heat can cause degradation.

Periodically clean hard hat shell and suspension system following manufacturer’s guidelines.
- Never use paints, solvents, or hydrocarbon type cleaners as this can cause damage to the helmet that will not be visible.
- Do not store items such as earplugs, lighters, cigarettes, or other items between the suspension system and shell.
- This space is required to absorb the force of impact.

The useful life begins when the helmet and suspension are placed in service.
- The date stamped on the helmet and suspension reminds you of the manufacture date.

Do not apply any stickers, or alter the helmet in any way.
- This can prevent detection of damage through inspection or could reduce the dielectric properties of the helmet.

Clean with a mild soap and warm water.

Do not mix suspension and helmet sizes.

**Foot Protection**

Foot protection is required where there is potential danger of foot injuries that may be caused by falling or rolling objects, objects piercing the soles, electrical hazards, or
chemical hazards. The company requires that all protective footwear be designed according to ANSI Z41.

Only over the ankle, safety rated footwear shall be worn at all times while on the job.

When selecting footwear the following must be considered:
1) Impact resistant toe
2) Slip-resistance, especially on oily / greasy surfaces
3) Insole puncture resistance
4) Electrical hazard protection
5) Comfort
6) Insulation from heat or cold
7) Shock absorbing outsole
8) Water repellent

Use and Care of Foot Protection
- It is important to properly care for footwear and to inspect it periodically.
- Follow the manufacturer's recommended guidelines for care.
- Footwear should be replaced if it is damaged or worn and does not provide proper protection.

Regularly inspect footwear for the following:
1) Worn toes exposing protective toe guard
2) Cracked or lacerated uppers
3) Signs of separation between the soles and uppers
4) Holes or cracks in soles or heels
5) Metal imbedded in heels or soles

Hand Protection

Hand protection is essential to prevent injuries from hazards such as abrasions, cuts, lacerations, chemical exposure, or electrical shock.

Because our hands are exposed to many work place hazards, protecting the hands is essential.

While a general duty work glove made of leather may offer good protection from abrasions, it will not provide protection from chemical absorption through the skin, or electrical shock.
- Therefore it is important to select the proper glove for the job.

Employees should be aware of the following limitations of gloves:
1) No single glove will protect against all exposures.
2) Gloves are subject to physical wear and tear, and will degrade over time.
3) Gloves should be replaced after repeated exposures or a reasonable period of time.
4) Refer to the manufacturer's recommendations for the chemical being used.
5) Gloves may reduce dexterity or may become caught in equipment.

When selecting the proper glove consider:
1) The type of hazard (chemical, cuts, heat)
2) Dexterity requirements
3) Comfort
4) Puncture/penetration resistance
5) Permeability
6) Degradation.

Always consult the Manufacturer's testing data and recommendations regarding performance.

The following is a brief guide for glove selection.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Type of Glove</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laceration, cut, abrasion or punctures from general work</td>
<td>Puncture and cut resistant glove made of cowhide with Kevlar liner or rubber dot coated Kevlar glove</td>
</tr>
<tr>
<td>Burns from hot engine surface</td>
<td>Heavy-duty cowhide or Kevlar glove (depending on surface temperature)</td>
</tr>
<tr>
<td>Burns from handling hot or cold parts during assembly / disassembly</td>
<td>Leather welders glove or heat resistant glove (depending on surface temperature)</td>
</tr>
<tr>
<td>Exposure to lubricating oil and some cleaning fluids</td>
<td>Nitrile glove</td>
</tr>
<tr>
<td>Electrical shock</td>
<td>Rubber insulating gloves rated for the proper voltage, with leather protectors</td>
</tr>
<tr>
<td>Chemical burns – Sulfuric Acid when servicing batteries</td>
<td>Natural Rubber, Nitrile or Neoprene glove</td>
</tr>
</tbody>
</table>

Care and Use of Gloves

Disposable gloves should be discarded after each use and not reused.

Non-disposable gloves should be cleaned according to the manufacturer's recommendations after each use.

Insure that gloves are stored in an area free of dust and chemical contaminants.

Protective Clothing

Work conditions often require PPE that affords protection to the entire body.

Several types worn by employees include flame resistant coveralls, or shirt / pant combination, and aprons.
**General Clothing Requirements**

- Loose clothing and jewelry shall not be worn while working around moving machinery.
- Hair length shall not pose a risk of entanglement in rotating machinery (i.e. adequately contained).

**Aprons**

- Aprons protect the chest, abdominal area, and upper legs from chemical splashes during operations involving chemicals such as servicing a battery.
- Aprons are made of the same chemical protective material as gloves.
- Aprons shall be used in conjunction with appropriate face shield, and safety glasses or goggles, while performing work activities with a potential for chemical splashes.

**Fire Resistant Clothing**

When required, Linear Controls, Inc. personnel shall wear fire resistant clothing when working outside of personnel quarters if the facility processes, contains or has the potential to contain any quantity of hydrocarbons.

- Company employees can work in environments where there is the potential for flash fire or electrical arc blast.
- Because of these hazards personnel may be required to wear fire resistant clothing.

FRC shall meet the requirements of NFPA 2112 (Category 2) standards for flame resistant garments. The outer most layer of clothing must be FRC and long sleeved.

To provide maximum protection to the employee, only 100% cotton underclothing should be worn.
- Synthetic, silk, or polyester blend under garments may not be worn.

**Defective or damaged PPE shall not be used.**

**Training Requirements**

Linear Controls, Inc. will provide training to each employee who is required to use personal protective equipment. Upon completion of this training the employee will sign a Personal Protective Equipment Guidelines form which shall be retained in the employees training file.

**Training Frequency**

Company personnel will be trained according to the following schedule:
1. Annually.
2. Initially, before the use of any new PPE that may be introduced.

Retraining will be done when:
1. If the employee indicates by his job performance that he does not understand or have the skill to effectively use PPE on the job.
2. Changes in the workplace render previous training obsolete.
3. Changes in the type of PPE to be used render previous training obsolete.
4. Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retrained the required understanding or skill.
3. OFFICE SAFETY

Purpose

The purpose of this procedure is to establish guidelines for all personnel in Office Safety and Emergency Response.

Scope

This procedure applies to all personnel, including company, client, and/or visitors while on company premises.

Emergency Response, Fire Drills, and Evacuation Drills

The facility must have an Emergency Response Plan.

Emergency Response Names and Phone Numbers must be posted in an obvious place in the facility.

Facility diagram marked with the locations of the following must be posted in an obvious place in the facility:

1) Primary Evacuation Routes.
2) Primary Assembly Areas.
3) Secondary Evacuation Routes.
4) Secondary Assembly Areas.
5) First Aid Equipment.
6) Fire Extinguishers.

Emergency Response Drills must be conducted and documented yearly.

- Total employee participation is mandatory.

Safety Meetings and Inspections

Safety meetings should be held and documented on a monthly basis.

Regular safety inspections should be conducted in offices as well as working areas on a quarterly basis.

Furniture and Equipment

Furniture should be arranged to avoid contact with heaters.

Wherever possible, filing cabinets should be arranged side by side and bolted together to prevent a cabinet from toppling forward when one of the higher drawers is opened. Where there is a single filing cabinet, great care must be taken to prevent toppling when a higher drawer is opened.

- If practical, arrange the files so that the lower drawers bear the heaviest load.
- Always close a drawer before opening another in the same cabinet.
- Always close all drawers in cabinets and desks, when the access to the information contained is no longer needed to complete the task at hand.
Use extreme caution when pulling out the typewriter platform of a typewriter desk when there is no typewriter on the platform.

- Without the counterbalancing weight of a typewriter, the platform snaps into place with sufficient force to cause severe injury to hand or arm if caught between the platform and desk top.

Make sure there is sufficient space between all furniture to allow access and egress of the area.

- Try to eliminate sharp corners and protrusions from all office furniture and equipment.

Do not place feet on a desk or table while sitting in a chair, because serious injury could result if the chair were to slide from under you.

**Stationary and Supplies**

Keep items such as paper clips, thumbtacks, rubber bands, pencils, and the like stored in proper containers for their use as needed.

Never leave them loose on the desk top or allow them to fall on the floor where they could become a slipping hazard.

If you must lick envelopes, beware of mouth cuts from the paper edges.

- To avoid both cuts and germs use a moistener.

Use staplers, paper cutters, pencils, knives, and scissors with care; they can produce serious cuts or puncture wounds.

Paper cutters should be left in a closed position.

A paper edge is capable of infliction of a painful cut.

- Avoid cuts by picking up an individual sheet of paper at the corner, not at the side.

Handle sharpened pencils as carefully as you would an open knife or an ice pick.

Do not place sharpened pencils or other pointed objects upright in a container or upright in a pocket of any clothing.

- Do not throw sharpened pencils or other pointed objects in the air or between personnel.

**Lifting and Climbing**

Always use an approved ladder or stool to stand on to get to, or repair, articles out of reach from the floor.

- Never use any kind of chair or other makeshift device to reach high places.

Never try to lift or move furniture or heavy objects by yourself.

- Always use proper dollies and trucks to handle heavy objects.
Housekeeping

Remove any type of spilled liquid or other material from the floor immediately.

When office building floors are waxed, a nonskid wax should be used.

Never throw glass, cans with rough edges, or similar objects in a waste paper basket.
  - They should be placed in exterior waste containers and disposed of as soon as possible.

Never use waste paper baskets for ash trays or empty ash trays in waste paper baskets.

Empty waste baskets in proper disposal container as needed.

Distorted metal waste paper baskets, sharp burrs on metal furniture, and splintered edges on wooden furniture, should be eliminated by repair or replacement.

Always practice good housekeeping.
  - Do not leave anything lying loose on desks, tables, or on the floor or in hallways.

Electrical

Keep approved electric cords, telephone, and radio cords off the floor and out of isles.
  - Cords which are worn or have exposed wires should be replaced.

Do not overload electrical circuits, cords, or outlets with too many appliances.

Do not place electric wires or cords under carpets or rugs.
All electrical breakers for electrical circuits must be marked.

Keep doors to breaker boxes marked and closed.

Doors and Passageways

Open doors into offices and hallways carefully; something or someone may be on the other side.
  - Approach blind corners with caution.

Approach doors that open toward you from the side, that way you will not be in the path of the door’s swing if it should open unexpectedly.

Never stand in front of a door that opens towards you.

All doors should open outward from the work area.

Do not lock exit doors unless they have emergency exit locks installed.

All exit doors should be marked.

All work areas should have emergency lighting properly installed and maintained.
It is a good practice to equip doors that are opened frequently, such as doors to reproduction rooms and hallways, with glass windows.

Any loose carpet should be replaced or glued down to prevent tripping hazards.

Broken glass tops on desks or tables must be removed as soon as possible.

All stairs should be equipped with hand rails.
- These hand rails are to be used when going up or down stairs.

All offices will have a means of exit spaced no more than 100 feet apart.

No office or floor of an office building will have less than two exits.

**Flammable or Toxic Materials**

All flammable or toxic materials must be:
1) Kept and stored in approved containers, with contents labeled for identification. Contents must not be left uncapped.
2) Storage areas must be properly marked and no non-compatible substances stored together.
3) A copy of all MSDS sheets must be maintained on all chemicals.

**Safety Equipment**

All floors of a building will have approved First Aid Kits located in easily accessible places.
- These First Aid Kits will be properly refilled and inspected on a regular basis.

All floors of a building will have approved fire extinguishers that are properly and regularly inspected and maintained.

Hard heels are unsafe for wear in the office.
- Wear a non-marking rubber or non skid type of heel on your shoes to prevent slipping.

**Evacuation Procedures**

Fire or evacuation needs:
1) Know the location and methods of operation of all fire fighting equipment.
2) Know which type of extinguisher is effective on wood, oil, grease, and/or electrical fires.
3) Know how to report a fire.
4) Have escape routes planned and marked.
   a. Diagrams of the escape routes, fire fighting equipment, and first-aid equipment should be posted in conspicuous places in the work areas.
   b. Be familiar with survival techniques in case you are trapped in a fire.

**The Office is No Place for Horseplay**

This type of action could endanger someone’s personal safety.
4. WAREHOUSE SAFETY

Purpose

The purpose of this procedure is to establish guidelines for all personnel in Warehouse Safe Practices and Emergency Response.

Scope

This procedure applies to all personnel including company, client, and/or visitors while at one of the company facilities.

Procedure

The activities of loading, unloading, storing, and handling supplies place personnel working or visiting the area in potential danger of injury.

Hazardous Materials

The purpose of this procedure is to provide guidance to all personnel on the safe use, handling, and storage of hazardous chemicals.

Following the guidelines and protective measures in this procedure will reduce the potential for incidents involving chemical handling.

- Company personnel must understand the Hazard Communication Program.
- The company program provides additional information on hazard communication and hazardous materials, including required protective measures for all company employees.

Doors, Passageways, and Windows

Warehouses should be maintained in an orderly manner at all times.

Broken window panes should be replaced to prevent personal injury and weather damage to items and material stored.

Doors should be kept in good repair.

Locks, hinges, hangers, and tracks should be lubricated, repaired, or replaced as needed to insure proper operations.

- This will prevent personal injury and give proper security for company materials.

Doorways, aisles, and passageways should be kept clear of obstructions.

Personnel passage ways, vehicular routes, fire fighting equipment, first aid stations, and specific areas of the warehouse should be marked in a legible manner.
Floors and Stairways

Floors, loading platforms, elevators, and stairways should be kept free of oil, grease, slippery materials, protruding nails, splinters, and worn or weak spots.

Broken planking and floor members should be repaired immediately.

Supporting timbers or structural members should be inspected regularly.

Floor and shelf loading limits should be posted in a conspicuous location and not exceeded.

Holes, cracks, or breaks in concrete floors should be patched to prevent falls or injuries.

Any second story storage areas should have load limit signs posted.

Material Storage

All boxes, packages, or material should be neatly stacked in properly marked storage areas, bins, or racks to prevent them from falling.

- Falling materials could cause personal injury or damage to the material and company property.

While cases and packing crates are being opened, care should be exercised to avoid injury from nails, splinters, bands, flying particles, or slipping on packing material.

Products in glass bottles or aerosol cans should not be exposed to direct sunlight or other sources of heat, and should be stored in such a way that they will not be broken or ruptured.

All packing material, empty boxes, and shipping containers should be removed and disposed of in the proper manner.

Free standing stacks of palletized material should be stable.

High stacks of palletized material should be cross tied for stability.

If cases are to be moved by lift truck, the operator's vision should not be blocked.

Pallets used in storing and handling packages should be kept in good repair.

- Proper size and type of pallets should be used for each item stored.
- Empty pallets should be stored in neat accessible stacks.

Personnel should use proper lifting methods when handling material.

Proper provisions should be made to safely reach high shelves for the storage or removal of materials.

Shelving shall be periodically inspected for condition and strength.
If heavy objects, such as flanges or fittings are placed in bins, strips should be placed across the lower part of the bins to keep such objects from falling out when one of them is removed.

An inventory of all products, tools, and material must be made and kept current.

**Material Safety Data Sheets**

All containers of toxic, corrosive, or hazardous materials stored in the warehouse will have proper labeling and markings that will comply with OSHA CFR 1910 1200.

All material received from vendors or other company locations will be so marked and have Material Safety Data Sheets supplied with them.

A permanent file of all MSDS sheets will be maintained in an accessible location in the facility at all times.

All personnel will be made aware of any corrosive, toxic, or hazardous materials.

**Truck Loading and Unloading**

In most cases forklifts will be utilized to transfer material and load or unload trucks and rail cars.

When utilized, forklifts will be operated and maintained as per OSHA 29 CFR 1910.178.

Personnel should stand to one side and open any door of a van or box car very slowly.

- Loads sometimes shift and fall against the wall and door of the van or boxcar while in transit.

Trucks and rail cars should not be overloaded. All pallets, packages, and material should be stacked so they will ride well in transit and be easily handled when unloaded.

Care should be taken when handling all material to avoid personal injury and damage to property and material.

**Yard Maintenance and Safety**

All facilities should have adequate dock and/or unloading areas with proper access and egress to prevent traffic hazards while providing for safety.

All routes of entry and exit should be clearly marked.

All facilities should have an adequate parking area, as remote as practical from operating areas and enforce its use.

Weed and grass control programs should be implemented to improve appearance and prevent fire hazards.
All unusable or unneeded material should be disposed of in the most timely and efficient manner possible.

Warehouse, dock, and storage areas shall be kept free from accumulation of materials that constitute hazards from tipping, fire, explosion, or pest harborage.

All warehouses should have adequate trash disposal containers with regular pick up service.
- Any fire or slipping hazard should be eliminated or cleaned up immediately.

Fences and gates with locking devices are desirable for keeping unauthorized persons from entering and causing damage.

**Safety Equipment**

All floors of a building will have approved First Aid Kits located in easily accessible places.
- These First Aid Kits will be properly refilled and inspected on a regular basis.

All floors of a building will have approved fire extinguishers that are properly and regularly inspected and maintained.

A clear space should be maintained around fire protection equipment, fire fighting equipment, and first aid stations.

Hard heels are unsafe for wear in the office.
- Wear a non marking rubber or non skid type of heel on your shoes to prevent slipping.

Know the location and methods of operation of all fire fighting equipment.

Know which type of extinguisher is effective on wood, oil, grease, and or electrical fires.

Know how to report a fire.

Have escape routes planned and marked.

**Lifting and Climbing**

Always use an approved ladder or stool to stand on to get to, or repair, articles out of reach from the floor.
- Never use any kind of chair or other makeshift device to reach high places.

Never try to lift or move furniture or heavy objects by yourself.
- Always use proper dollies and trucks to handle heavy objects.

**Housekeeping**

Remove any type of spilled liquid or other material from the floor immediately.
When office building floors are waxed, a nonskid wax should be used.

Never throw glass, cans with rough edges, or similar objects in a waste paper basket.
- They should be placed in exterior waste containers and disposed of as soon as possible.

Never use waste paper baskets for ash trays or empty ash trays in waste paper baskets.

Empty waste baskets in proper disposal container as needed.

Distorted metal waste paper baskets, sharp burrs on metal furniture, and splintered edges on wooden furniture should be eliminated by repair or replacement.

Always practice good housekeeping.
- Do not leave anything lying loose on desks, tables, or on the floor or in hallways.
- Diagrams of the escape routes, fire fighting equipment, and first aid equipment should be posted in conspicuous places in the work areas.
- Be familiar with survival techniques in case you are trapped in a fire.

**Emergency Response, Fire Drills, and Evacuation Drills**

Each facility must have a Site-Specific Emergency Response Plan.

Emergency Response Names and Phone Numbers must be posted in an obvious place in the facility.

Facility diagram marked with the locations of the following must be posted in an obvious place in the facility:
1) Primary Evacuation Routes.
2) Primary Assembly Areas.
3) Secondary Evacuation Routes.
4) Secondary Assembly Areas.
5) First Aid Equipment.
6) Blood Borne Pathogens Kits.
7) Fire Extinguishers.

Emergency Response Drills must be conducted and documented yearly.
- Total employee participation is mandatory.

**Safety Meetings and Inspections**

Safety meetings should be held and documented on a monthly basis.

Regular safety inspections should be conducted in offices as well as operating facilities on a quarterly basis.
5. BASIC SAFETY AWARENESS

Purpose

Linear Controls, Inc. is vitally interested in the safety of employees and proper use of equipment in all phases of its operation.

As a result, this procedure has been designed to assist all company personnel in knowing and complying with good safety practices in their daily work activities.

Scope

This procedure applies to all work locations, both company and client's.

Effectively implemented this procedure will ensure a safer workplace, thus reduce the number of job-related fatalities, illnesses, and injuries.

Procedure

Employee knowledge and routine observance of good Safety practices will result in an accident free workplace.

We believe that safety is everyone's responsibility, and that the practices and procedures set forth in this Safety Manual should become a part of your daily life.

Everyone must maintain an active interest in the Safety Program and give their undivided attention to on-the-job safety discussions, which their supervisor may introduce from time to time to prepare them for new or hazardous work.

For sanitary and safety purposes the company will not allow body piercing studs, ear rings, rings, chains, jewelry, or any other item that may be caught in equipment or structures while on the job or working at any location.

The employee must report promptly to his supervisor any injury he sustains while at work, no matter how slight he may consider the injury to be.

The employee must always keep in mind that one of their primary responsibilities as an employee is to perform his/her duties in a safe manner.

The employee must learn the approved safe practices applicable to his work and observe them at all times.

Everyone should always be alert to safety and health hazards.

- Where feasible, correct or eliminate all obvious hazards immediately.
- Report all hazards and any corrective measures taken to the supervisor.
- Think before you act.
- Follow instructions.
- Don't take chances.
- If you don't know...ask.
Correct and/or report to the client or your immediate supervisor, all unsafe conditions immediately.

Use the right tools and equipment for the job.
- Use them safely.
- Keep tools in good condition.
- Use, adjust, and repair only tools, machines, and equipment that you are trained and authorized to use.

Lift with your back straight and legs bent.
- Get help with heavy or awkward loads.

Only trained and authorized employees shall operate machinery or equipment at any time. This applies to both daily operators of machinery and equipment and those who only occasionally have cause to use machinery or equipment.

Employees shall operate machinery or equipment according to published instructions, classroom training and/or on the job training.

No one will defeat the function of a safety device unless prescribed by operating or maintenance procedures.

All safety device malfunctions will be reported to the supervisor/client as soon as possible.
- Flag the device immediately to warn others.
- In rare instances it could be necessary to defeat a safety device, or use a makeshift procedure as a temporary measure.
- If this is so, the effected equipment must never be left unmanned.
- The problem must be corrected with the appropriate equipment or procedure as soon as possible.
- Always notify the supervisor/client and all personnel that may be subject to come in contact with the hazard.

No one should attempt to do a job alone when common sense and safe working practices tell him/her assistance is needed.
- Employees working in dangerous locations are not permitted to work alone.
- If it is necessary to work alone, always plan your work and try to anticipate any hazards you might encounter.

All personnel will use the protective equipment provided and prescribed for the work they are doing.
The workplace is no place for clowning.

Never engage in scuffling, practical joking, or horseplay of any kind on the job.
- Such conduct is positively prohibited.

Running on the job invites accidents.
- Under normal circumstances, no one should run in performing their work.

Fighting while on duty and/or on the job location is forbidden.
• Any employee observed fighting on the job will be subject to disciplinary action up to termination.

Leaving the work location without proper permission and/or relief while on duty is not permitted.

Be careful in walking or moving about the work area so as to avoid slipping, tripping, or falling.
• Be especially careful when weather conditions, such as ice and mud, create or aggravate hazardous situations.

For their own protection, everyone is urged to observe good safety practices off the job, as well as on the job.

Relief crews coming on duty must be informed of any changes that have been made in equipment or procedures, since they were last on tour that might present a hazard.

Avoid carrying loads that extend above eye level or otherwise obstruct vision.

Retreat to a safe location when unusual strains are placed on equipment or materials.

Never walk and/or work under suspended loads.
• After a load has been raised, it must be cribbed, blocked, or otherwise secured at once.

Personnel should not walk on pipes or beams.
• They should use proper ladders and scaffolding.
• Personnel working six feet above ground or working platform level will wear safety harnesses. (Refer to Personal Protective Equipment.)

No major repair work shall be done over moving machinery.
• When close to moving machinery, a temporary guard should be provided between the machine and the employee at work.
• Never attempt to grease moving machinery that is not equipped with properly guarded grease fittings.
• Drive belts must not be tightened while they are in motion.

All pressure must be removed from vessels, lines, regulators, meters, fittings, and connections before disconnecting, moving, or working on them.
• Weather conditions should be considered when blowing vessels or lines to the atmosphere.
• A hazardous condition may exist if sufficient wind currents are not present.

Never hammer or pound on lines or fittings that are under pressure.
• Water and steam lines should never be converged into one discharge.

Every opening in decks, floors, the ground, or pits into which a person can accidentally step, must be constantly attended or protected by barricades or standard railings.
When two or more persons are using hammers and the like, they should maintain a safe distance from one another.

Hazards such as nails or sharp edges around tops of kegs, barrels, boxes, cans and other containers should always be eliminated immediately.

Boards should never be thrown down, or allowed to lie around, with nail points protruding.
- The nails should be removed or bent down, preferably removed.

All operators of lifting equipment must be informed of the capacities of the equipment, and such operators must not exceed the capacity ratings.
- Capacity charts or signs shall be placed in clear view of the operator.
- Guards removed for repair work must be replaced immediately when repairs are completed.
- All hooks on hoisting equipment shall be visually inspected for cracks before using.

Drinking water containers shall have spigots, and individual sanitary cups shall be provided.
- A receptacle for used cups shall also be provided.

Should clothing become saturated with oil, gasoline, or chemicals, the employee should change clothes immediately to prevent skin irritation.
- The contaminated clothing must be placed in an approved properly
- Marked container, and disposed as per company procedure.
- The employee must avoid all sources of fire; including cigarettes, pipe, or cigar, prior to changing clothes, and wash the part of his body affected with soap and water.
- A doctor should be consulted if skin rash develops.

All vertical equipment must be securely anchored, guyed, or otherwise supported, during erection or dismantling before anyone is allowed to climb upon it.

Abuse or destruction of any company equipment or property is forbidden.

Obey warning signs and tags. They are posted to point out hazards.

Smoking in all posted prohibited areas is not permitted

**Housekeeping**

Help keep everything, especially your work area, clean and orderly.

Material must never be:
1) Piled closer than 10 feet from the center of a railroad track or road.
2) Placed or left in aisles or walkways.
3) Improperly stacked or stored.
Fall Protection

Any person working six feet or more above any working level will wear a safety harness, with a safety lanyard properly secured to a stationary object.

Clothing

All employees are required to wear clothing which affords sufficient protection for all weather conditions.

- Do not wear clothing, such as dragging pants, cuffs, shirt tails outside pants, loose or torn clothing, which could get caught in machinery or otherwise cause an accident.
- Worn or deteriorated work boots are not allowed.
- All personnel must wear clean and presentable clothing.
6. FIRE PREVENTION AND INCIPIENT FIRE FIGHTING

Purpose

The purpose of this procedure is to establish fire prevention practices and incipient fire fighting procedures for Linear Controls, Inc. personnel and aid the company in complying with OSHA 29 CFR 1910.157.

Scope

This procedure applies to all company personnel while on company or client work sites.

Training is mandatory on this procedure because the company and clients have provided fire extinguishers for some vehicles and work locations.

This will familiarize the employees of the general principals of fire extinguisher use and the hazards involved in incipient fire fighting.

Procedure

Fire prevention measures are efforts to reduce the incidence of fires by eliminating opportunities for ignition of flammable materials.

Smoking must be confined to areas specifically designated by the client and/or company management.

Smoking is not permitted in the immediate vicinity of tank batteries, process areas, or any area suspected to contain flammable vapors, regardless of whether a "NO SMOKING" sign is displayed.

Any area subject to contamination by flammable liquids or gas should be designated as a "NO SMOKING" area and a sign to that effect should be displayed.

Ignition Sources

Industrial fires can have many sources of ignitions.

- If an ignition source contacts a fuel source, such as an oil leak in or around turbo-machinery, a fire could result.
- If a leak is detected, stop work immediately and repair the leak.
- Use a personal gas monitor to continually monitor the atmosphere.
Fire Tetrahedron

In addition to identifying ignition sources, Field Service Personnel should be familiar with the fire pyramid. The four basic elements of a fire can be viewed as a tetrahedron.

- The four sides of the fire tetrahedron are oxygen, fuel, heat and chemical chain reaction.
- Field Service personnel may be more familiar with the fire triangle approach to fire prevention, which was acceptable fire prevention theory for many years.
- Modern fire protection theory shows the fire triangle remodeled into a fire tetrahedron.
- A fourth side has been added to account for the chemical chain reaction needed to sustain combustion.
- As with the triangle, removal of any side will put out or prevent a fire.
- Examples of how the fire tetrahedron theory applies to preventing or extinguishing a fire include:
  1) Oxygen removal, such as inerting a vessel with nitrogen.
  2) Fuel removal, such as wetting down or moving nearby combustibles when welding.
  3) Heat source removal, such as use of non-sparking tools or friction control maintenance.
  4) Chemical chain reaction, such as using halon to put out a fire.

Fire Prevention Housekeeping

Fire prevention housekeeping is an important aspect in the prevention of industrial fires.

Company personnel should follow established housekeeping rules and practices:
  1) Maintain good housekeeping at all work locations and in all vehicles.
  2) Promptly cleanup spills and properly dispose of contaminated rags and absorbent materials.
  3) Store combustible materials such as oil soaked rags, waste and shavings in approved metal containers with self-closing lids.
  4) Containers should be emptied daily.
5) Do not allow combustible materials such as paper to accumulate.
6) Use grounding and bonding to prevent static electric sparking when dispensing or transferring flammable liquids.

**Fire Extinguishers**

There are five classes of fires. Each class of fire burns a particular fuel type and is extinguished with a specific type of extinguishing agent as illustrated in the chart below.

<table>
<thead>
<tr>
<th>Class of Fire</th>
<th>Fuel</th>
<th>Effective Extinguishing Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Ordinary combustibles like wood, cloth, paper, rubber, and many plastics</td>
<td>Water, Foam, Dry Chemical, Halogenated agents</td>
</tr>
<tr>
<td>B</td>
<td>Flammable liquids and gases</td>
<td>Carbon Dioxide, Foam, Dry Chemical, Halogenated agents</td>
</tr>
<tr>
<td>C</td>
<td>Energized electrical equipment</td>
<td>Carbon Dioxide, Dry Chemical, Halogenated agents</td>
</tr>
<tr>
<td>D</td>
<td>Combustible metals</td>
<td>Dry Powder (Only!)</td>
</tr>
<tr>
<td>K</td>
<td>Combustible cooking media, like animal fat or oil (vegetable)</td>
<td>Wet Chemicals (Best!)</td>
</tr>
</tbody>
</table>

**Inspection of Fire Extinguishers**

Fire extinguishers must be visually inspected on a monthly basis.

This inspection includes:
1) Visual inspection for damage or corrosion.
2) Check for pin and seal.
3) Check to ensure extinguisher is full.
4) Check to ensure extinguisher is properly located and accessible.

In addition to the monthly inspections, extinguishers must undergo an annual maintenance check which shall be recorded by Linear Controls, Inc.

Under certain conditions a fire extinguisher must be removed from service. These conditions include but are not limited to:
1) The cylinder or shell threads are damaged.
2) There is corrosion that has caused pitting, including corrosion under removable name plate assemblies.
3) The extinguisher has been burned in a fire.
4) Failure to pass inspection.
Fire extinguishers should not be filled with material other than that which is designated on the label.

Company personnel may provide initial response to a small fire with a fire extinguisher.

When fighting a small fire with a fire extinguisher follow the **PASS method**:

- **P**ull the pin.
- **A**im at the base of the fire.
- **S**queeze the trigger.
- **S**weep the extinguisher in a back and forth and motion.

**Fire Emergency Procedure**

Company personnel should respond to a fire emergency using the following procedure:

1. Notify emergency responders of the fire.
   a. It is the responsibility of the local fire department or customer fire brigade to respond to, and extinguish, a fire.
2. After emergency personnel have been notified, company personnel may attempt to extinguish a small fire with a fire extinguisher.
3. Stay upwind of a fire and stay clear of the flames. Report to an emergency assembly point.
4. After a fire is extinguished, observe the area to ensure that there is no danger of re-ignition.
   a. Do not ever turn your back on an apparently extinguished fire.
5. Do not return to work until local officials have declared that it is permissible to do so.

Employees shall be made aware by the owner/client of the facility contingency plan provisions including evacuation routes and alarms.

Employees should participate in emergency evacuation drills and practice rescue procedures as conducted by the owner/client.

**Training Requirements**

Linear Controls, Inc. has provided portable fire extinguishers for employees use in the workplace, therefore it is mandatory that we provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved in incipient stage fire fighting.

Company personnel will be trained on the following topics:

1. Fire prevention and theory
2. Hazards involved in the incipient stage of firefighting.
3. Fire safety housekeeping.
4. Proper storage of flammable and combustibles.
5. Proper use of fire extinguishers in the incipient stage of firefighting.
6. The contents of this procedure.
Training Frequency

Company personnel will be trained according to the following schedule:
1) Initially.
2) Every 12 months.

Gas Hazards

Each employee shall use a portable gas detector as required in all high gas hazard areas.
- The gas monitor must be calibrated per manufacturer’s recommendations and contain a current calibration sticker on the monitor providing the date of calibration.
- Bump test are required to be completed at the beginning of each day the monitor is in use per the requesting owner’s client and manufacturer’s guidelines to ensure the monitor is functioning correctly.

Gas Hazards Training Requirements

Gas hazard awareness training must be provided before initial assignment and annually thereafter.
- Unless otherwise directed by the owner/client, gas hazard awareness training will be conducted at the owner/client facility on the gas detector model the employee will be expected to use and operate.

Gas hazard awareness training should include at a minimum:
1) Location of alarm stations
2) Gas monitoring equipment – portable and fixed detection
3) Gas alarms
4) Gas hazards
5) Characteristics of gases
6) Any plant or department specific gases of concern
7) Personnel rescue procedures
8) Use and care of SCBA
9) Evacuation procedures
10) Staging areas – primary and secondary

Gas hazard awareness training will be documented and available for review.
7. SMALL TOOLS AND EQUIPMENT

Purpose

Linear Controls, Inc. is vitally interested in the safety of employees and proper use of tools and equipment in all phases of its operation.

As a result, this procedure has been designed to assist all company personnel in knowing and complying with good safety practices while using small tools and equipment in their daily work activities.

Scope

This procedure applies to all work locations, both company and client's.

Effectively implemented this procedure will ensure a safer workplace, thus reduce the number of job-related fatalities, illnesses, and injuries.

Procedure

Tools shall be kept in an orderly fashion in the tool cage or in the gang box so that they may be easily found when needed.

- All tools must be cleaned after use.

All tools and equipment shall be inspected regularly. Defective and unsafe tools or equipment must be reported promptly to the supervisor, and repaired or replaced at once.

- Defective tools shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.

Hand or power tools shall be used only in the manner and for the work for which they are designed.

- Never remove safety guards from power tools. Never subject a hand tool or power tool to strain obviously beyond its capacity.

All hand and power tools and similar equipment, whether furnished by the Linear Controls, Inc. or the employee, shall be maintained in a safe condition.

Tools must not be left lying on moving machinery.

Tools or loose material not bolted, tied or secured in an approved manner must be removed from elevations.

When operating driving tools, use a tool holder for the chisel, bar, or other tools being struck.

- NOTE: Always wear proper eye protection.

Cutting tools are safer and more efficient when kept sharp. Avoid using dull cutting tools.
**Abrasive Wheel Grinders**

Abrasive wheels must have a protective shield and a tool rest that is adjustable to maintain a clearance no greater than one-eighth inch. The operator must wear eye protection and should wear a face shield and stand to one side of the plane of rotation whenever possible.

Never plug in a wheel grinder to a power source without verifying that the grinder switch is in the “off” position.

The spindle speed of the machine must not exceed the maximum operating speed marked on wheel.

Before a wheel is mounted, it shall be closely inspected to make sure it has not been damaged.

**Handles**

Remove the handle from a jack when it is not in use. Use the correct jack.

Handles of all sledges, hammers, mauls, mattocks and other striking tools must be properly wedged into the heads.

Files shall not be used without handles.

Non-conductive materials, such as wood or fiberglass, must be used for handles on shovels and posthole diggers to protect from electrical shock.

Cracked or split handles must be replaced as soon as possible. Never paint wooden handles and never tape cracked or split handles.

**Power Mowers, Edger’s and Trimmers**

The following conditions must be observed when using power mowers, edgers and trimmers:

1) Before beginning work, carefully inspect the area and remove all wire, rocks, glass and other objects that could become a “missile” if struck by the blade. The mower discharge chute and rear mower housing must be equipped with a deflector shield.

2) Before starting the mower, inspect it for loose parts and defective or loose guards. Disconnect the spark plug wire before attempting an inspection or repair of the mower blade.

3) Do not add fuel to the engine gas tank while the equipment is running or while it is hot. Do not refuel in a closed area.

4) Do not allow anyone to loiter in the immediate vicinity of operations.

5) The operator must wear eye protection as appropriate when mowing, edging or trimming. Steel toe shoes are strongly recommended.

6) Fuel for power mowers must be carried and stored in approved containers (safety cans.)

7) Never leave power equipment unattended while it is running.
Power Tools

Before repairing, servicing or changing components on any power tool, the power source must be disconnected. If a gasoline engine drives the tool, the ignition wire must be disconnected from the spark plug or other precautions must be taken to prevent accidental start of engine.

When there is danger of explosion or fire, air-operated tools must be used.

Electrical tools must not be used on tanks or lines until the tanks, lines and surrounding area are free of combustible gas. Combustible gas must not be used to operate air-operated tools. Employees using air-operated tools must be sure that the source of air supply cannot exceed the working pressure of the tool.

The frames of portable electric tools and equipment, except UL approved double insulated tools, must be grounded either through a third wire in the cable containing the circuit conductors or through a separate wire grounded at the source of the current.

Outlets supplying power to portable electric tools that are either outside or in wet locations must have approved ground-fault circuit protection or other means of grounding the circuit.

Electric power tools and equipment showing worn, deteriorated or inadequate insulation must be removed from service until repaired.

Screwdrivers

Avoid the careless, improper use of screwdrivers. Never attempt to use a screwdriver as a pry tool, drift or chisel.

Screwdrivers should be held in such a way that if they slip, they will not puncture your skin or anyone else.

Hand Wrenches

Wrenches should not be used directly over the head. Instead, work at an angle.

The wrench must fit the nut.

Never use a wrench to secure leverage by placing its jaws into the jaw or on the handle of another wrench.

Adjustable pipe wrenches and crescent-type wrenches should be adjusted to take a full but snug grip on a pipe or nut. The pull should be made toward the jaw of the wrench so that the grip is tightened and undue strain on the tool is avoided. Avoid the use of a crescent type wrench when a box-end wrench or open-end wrench can be used.

Never step on wrenches or tongs when additional force is needed.

Extensions or “cheaters” shall not be used on wrench handles until efforts to break or make up the connection with the largest wrench available have failed. If a cheater is
used, place it on the largest wrench available. The cheater must extend the full length of the handle so that it will not damage the wrench or slip off the handle. Never use a cheater on a crescent-type or aluminum wrench.

Fiberglass and aluminum cheaters shall not be used.

Guarding

When power operated tools are designed to accommodate guards, they shall be equipped with such guards when in use.

The guard may not be manipulated in such a way that will compromise its integrity or compromise the protection in which intended.

Personal Protective Equipment

Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazard.
8. EMERGENCY ACTION PLAN & EMERGENCY PREPAREDNESS

Evacuation Alert Procedure

In the event of an emergency, Linear Controls, Inc. employees are to alert other personnel and visitors by a public address system announcement. The public address system is initiated by dialing star ten “*10” on the office phone system. The person that orders the evacuation will make an announcement that the site must be evacuated due to an emergency situation. If the public address system is not functional, an air alarm/horn must be used to alert personnel of the emergency. After the evacuation alert has been made, the person ordering the evacuation will call “911” to initiate emergency response, if needed. Personnel will not enter the evacuated area until it has been deemed safe to do so by management and/or Emergency Responders.

Evacuation Procedure

Upon hearing the announcement or alarm, all Linear Controls, Inc. personnel on site will stop whatever they are doing, close all doors and windows within reach on way out and proceed to nearest emergency exit.

The following individuals will ensure their area has been evacuated before evacuating the building themselves except in emergency situations that prevent them to do so:

- HR / Controller – Front Offices
- Randall Thomassie/Donald MacDonald – Kitchen & Middle Offices
- Gerald Viator/Tim Davis – Back Offices
- Jerrod Courville – Panel Shop
- Travis Buchanan/Jason Champagne – Warehouse & Yard
- McKenna Bergeron/David Domingue – Manufacturing Shop
- Mike Farrell/Ryan Richard – Generator Shop

After exiting the building, all company personnel will report to designated safe area (refer to Emergency Evacuation and Facility Map) for a head count.

- Susan Toups/Randall Thomassie will perform head count of all personnel on site.
  - The electronic in/out board will be utilized to ensure all employees have been accounted for.

Any employee meeting with a visitor (i.e. vendor, new hire, etc.) must have the visitor(s) exit the building with you. If anyone is missing, senior management will decide if attempts to find any missing personnel should be made. After the site has been evacuated, no one will enter the evacuated area until it has been declared safe to do by management and/or Emergency Responders.

Extinguishing Fires

Portable fire extinguishers are provided in the workplace for employee use. In the event of a fire, any employee may use extinguishers to attempt to extinguish the fire before evacuating if YOU feel it is safe to do so. If it has been determined that the fire can be controlled with fire extinguishers, another member of the staff must be alerted of the fire
emergency to assist with extinguishing the fire and to alert management of the fire emergency.

If the fire cannot be controlled with fire extinguishers, dial star ten “*10” on the public address system and state your emergency, location and inform personnel to evacuate the building. This will inform employees that the building must be evacuated do to a fire emergency. Once personnel have been ordered to evacuate, call “911” to alert the local Fire Department and report to designated safe area.

In Case of Fire or Fire Alarm

Procedure:

1) If you see smoke or flames or smell smoke, immediately notify all personnel by using the public address system (dial star ten “*10”) and call “911”.

2) If you think you smell a peculiar or unfamiliar odor, immediately notify all personnel by using the public address system (dial star ten “*10”) and call “911” if needed.

3) Information to be given to Dispatcher/Fire Department:
   a. What is the situation? What is on fire? What is the emergency?
   b. Address: 107 ½ Commission Blvd.
   c. Number of personnel on site: Approximately 40
   d. Telephone number: (337) 839 - 9702
   e. Listen to Dispatcher; always let dispatcher hang up first!

Special Instructions for the Mobility Impaired

Persons having any mobility impairment need to be considered prior to any need for evacuation. It is necessary for department managers to notify the Fire Department of any mobility impaired tenants, which may require special assistance in the event of an evacuation.

After Hours

If you see smoke or flames or smell smoke, do the following:

1) Isolate the fire (close door(s) if possible.)
2) Notify the Fire Department by calling “911”.
3) NEVER assume that someone else has called the Fire Department/”911”.

Fire Drills and/or Fires

Fire drills are to be conducted by Linear Controls, Inc. management at least once a year. All department managers are to be notified as the timing of these drills. Participation in the fire drills is mandatory for all building occupants (whether employees or visitors.)

Employees may quickly lock their desk and files if time permits and take any necessary personal items with them. In addition, computers should be turned OFF.

When alerted of fire emergency, evacuate area immediately and report to designated areas.
Be certain that all occupants of your area are out of their offices and conference rooms and that your area is completely vacated. Turn off the lights in each office and close the office doors if you can safely do so.

Handicapped or Disabled Personnel

If handicapped or disabled personnel are in the group being evacuated, a two-person team shall assist them. Once evacuated, inform management that disabled persons are out.

Medical Emergencies

The following employees are to perform medical duties during an emergency:
1) Any employee with at least First Aid/CPR training.
   a. In the event of a medical emergency, employees should only respond up to their level of training (i.e. First Aid/CPR, First Responder, etc.)

Medical Emergency Procedures

Medical emergency procedures if you witness someone having a heart attack/ stroke, see someone collapse/faint or any symptoms of the above:
1) Call for help:
   a. You or co-worker dial star ten “**10” on the public address system and state your emergency and location to alert personnel that there is a medical emergency.
   b. Call “911”
2) Medical trained personnel should respond to medical emergency location and assist as needed.
   a. Personnel not medically trained should assist only when asked and ensure location of medical emergency does not become “over crowded”.
3) Once Emergency Medical Services arrives, they are in charge of the medical emergency.

Reporting Injury or Illness

Call one of the following people to report injury or illness:
1) Randall Thomassie, Safety Coordinator
2) Susan Toups, Human Resources Director
3) Supervisor

If the sick/injured person is sent to the hospital, the Safety Coordinator or designated employee will accompany him/her to assist at the hospital until relatives arrive.

Tornadoes, Hurricanes and Severe Weather

If the building is occupied during severe weather, hurricane or a funnel cloud or Tornado is sighted in the vicinity, stay away from the perimeter of the building and areas where glass is present.

Leave your office and close the door, stay in the hallways or room with no glass.
If the Tornado is very close, sit or kneel down in hallway, place your head as close to your lap as possible and protect your head and neck with hand and arms.

**DO NOT ATTEMPT TO EVACUATE THE BUILDING UNLESS YOU ARE INSTRUCTED TO DO SO BY MANAGEMENT.**

Hurricane season is from June through November, with the majority of hurricanes occurring during September. The best defense against storm damage is alertness and prior preparation.

For instructions covering hurricane preparedness and evacuation procedures, personnel should become familiar with their local hurricane preparedness plans that are specific to the area.

**Hostile Intrusions**

In the event an unwanted/hostile individual attempts to or enters the building, dial star ten “*10” on the public address system and say “CODE YELLOW” to alert employees of the intrusion or hostile activity followed by your location.

- Department managers shall report to the reported location to help cease the intrusion or hostile activity and/or call “911”.
- When notified of an intrusion or hostile activity, employees shall close and lock their office door until notified the activity has ended.

**Transportation**

If you are involved in a motor vehicle accident while driving a company vehicle, you must report the accident to your supervisor and Safety Coordinator immediately.

What to do in Case of a Motor Vehicle Accident:

- Take precautions necessary to protect the scene of the accident from further accidents.
- Call Police. If someone is injured, request medical assistance. If fire is involved, request fire department aid. If necessary, send for help.
- Be courteous. Answer police questions. Give identifying information to the other party involved, but make no comments about assuming responsibility.
- As soon as possible, report the accident to the proper legal authority, supervisor and Safety Coordinator.

When an accident/incident or product release occurs the driver will assess the situation. The driver will get to a phone immediately to begin the response process through the safety department. The driver will remain in a safe location waiting on response personnel to address the situation.

- If product is being released and/or immediate danger from the accident is possible, the driver will call 911 or local authorities to help with response time.
- The driver will help keep all persons away from the scene except for emergency responders.
- The driver will not discuss the incident with anyone other than regulatory authorities, contracted clean up personnel, or company officials.
- Written notification reports shall be filled out and forwarded to:
The Department of Transportation
Director of Hazardous Materials Registration
Materials and Transportation Bureau
Washington, DC 20590

Copy to: State Department of Environmental Management

Initial Emergency Personnel and Numbers
- Chemtrec
  - (800) 424-9300
- Hazardous Material State Police
  - Baton Rouge, LA - (225) 925-6113
  - Emergency Response Hotline - (225) 925-6595
- Department of Environmental Quality
  - Baton Rouge, LA - (225) 342-1234

More Information

The emergency response plan shall be reviewed with employees:
- When the plan is developed or the employee is assigned initially to a job
- When the employee’s responsibilities under the plan change
- When the plan is changed

The emergency action plan is available for employee review on the company intranet.

Any employee needing more information about the plan or an explanation of their duties under the plan may contact:
- Randall Thomassie, Safety and Training Coordinator
9. RIGGING

Purpose

The purpose of this procedure is to identify for Linear Controls, Inc. personnel the requirements for working safely with cranes, hoists, slings, and related equipment.

Scope

This procedure applies to material handling and related equipment on customer and Linear Controls, Inc. premises both on and offshore.

This procedure provides information to enable Linear Controls, Inc. personnel to work safely while rigging and while in the vicinity of cranes and other lifting equipment.

Policy and Procedures

Only employees who have been properly trained, hold a valid rigger certification (API RP 2D) demonstrated hands-on capability and are authorized by the company shall be allowed to attach or detach loads.

Rigger Qualifications

The rigger has many job responsibilities and knowledge requirements, as does the supervisor. The rigger should:
1) Be able to verify load and weight by markings on the load and paperwork.
2) Be responsible for his/her own safety and that of his coworkers and remain alert at all times. (Be aware of surroundings)
3) Be responsible for keeping all unnecessary personnel out of the lifting areas.
4) Never allow anyone under a load.
5) Be responsible for halting operations and alerting the operator to any unsafe conditions or practices during lifting operations.
6) Must know and demonstrate competency in using all hand signals used in material handling.
7) Must become aware of proper lift and drag points on equipment requiring movement.
8) Must gain an understanding of the proper use of rigging equipment and be familiar with knots and the proper use of rigging equipment.
9) Make sure that the load is always directly under the lift point to prevent swinging and side loading.
10) Be able to select and inspect the proper rigging equipment.
11) Be able to assist the crane operator in inspections and documentation of the lifting equipment.

General Information

Rigging consists of the ropes, cables, chains, slings, pulleys, winches and related materials used stabilize, lift, or move items.
Safe rigging operations require observance of correct procedures and knowledge of the materials used.

Always be certain that cables are in a safe condition and heavy enough to carry the load.

Be sure that the rigging is safe and the loads are properly balanced.

Keep the loads free of all loose objects such as tools.

Be sure the load to be lifted is not greater than the capacity of the lifting device.

Keep your self and others clear of loads being lifted.

Great personal harm and extensive property damage can result from failure to observe the design limitations of hoisting equipment or from failure to recognize evidence of wear, weakening or damage.

Rigging equipment shall not be loaded beyond its recommended safe working load and load identification shall be attached to the rigging.

Rigging equipment not in use shall be removed from the immediate work area so as not to present a hazard to employees.

No employee shall be allowed under a suspended load.
  - All employees shall be kept clear of loads about to be lifted and of suspended loads.

**Hooks**

Hooks on all blocks, including snatch blocks, must a functional safety latch.

Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be of a type than can be closed and locked, eliminating the hook throat from opening. Alternatively, an alloy anchor type shackle with a bolt, nut and retaining pin may be used.

Welding is not permitted on any part of the hook

**Tag Lines**

Tag lines must be used to control loads unless their use creates an unsafe condition.

Before the hook is moved, personnel using tag lines must be sure that the lines are free with no knots.

Tag lines must not be wrapped around any part of the body.

The operator, signal person and load handlers are responsible for ensuring that the load is never over any person.
Slings

There are many types of slings.

- The choice of sling will depend on the type of materials being handled; some slings being more secure are less apt to damage the load than others.
- Slings are made of wire, rope, chain or manila rope.

Slings should be inspected before each use.

It is the responsibility of the user to be sure he/she is using the correct equipment in the correct manner and that the equipment is in a safe condition.

Sling angles of less than 45 degrees should be avoided since they result in high sling tensions which can lead to sling failure or crushing of the materials being lifted.

Synthetic Web Slings

Each day before being used, all slings, fastenings, and attachments must be inspected for damage or defects.

Any damaged or defective sling must be immediately removed from service.

General safe operating practices for slings of all types are:

1. Inspect the outer surface and stitching of the slings for cuts and abrasions.
2. Inspect the sling for the sewn in rating tag.
3. Do not use slings that have red safety threads showing along the outer flat surface. This indicates that the sling is badly damaged.
4. Slings shall not be shortened with knots, bolts, or other makeshift devices.
5. Sling legs shall not be kinked.
6. Slings shall not be loaded in excess of their rated capacities, and must be securely attached to their loads.
7. Slings shall be padded or protected from all sharp edges of their loads.
8. A sling shall not be pulled from under a load, when the load is resting on the sling.
9. Synthetic web slings shall be removed from service, if one or more of the following conditions are present:
   a. Acid or caustic burns.
   b. Melting or charring of any part of the sling surface.
   c. Snags.
   d. Punctures.
   e. Tears.
   f. Cuts.
   g. Broken or worn stitches.
   h. Distortion of fittings

Shackles

There are three types of shackles:

1. Screw Pin Shackle
2. Round Pin Shackle
3. Safety Shackle
All shackle pins must be straight and all pins of screw pin type must be screwed in all the way.

- Make certain that a bolt and screw pin shackle works easily.
- Never use a substitute bolt for the original unit, the alloys are different.
- Lightly oil the threads of a screw pin if needed.
- Do not use screw pin shackles if the pin is difficult to turn.
- Use safety pin or screw pin shackles whenever possible.
- Use the largest bearing surface possible on the shackle pin to avoid

**Fittings**

Check fittings for:

1) Cracks
2) Nicks
3) Bending
4) Excessive wear

**Inspecting Rigging Equipment**

Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall not be used and removed from service immediately.

The crane and its cable must be inspected:

- At least daily when being utilized.
- On a more frequent basis if heavy loads, heavy usage or extreme working conditions are noted.

All hooks and shackles on hoisting equipment shall be visually inspected for cracks before equipment is used.

Lifting equipment of any kind:

- Must be inspected periodically by qualified personnel.
- Must not be used if it is not working properly.

**Sling Identification and Inspection**

Slings, fittings and fastenings should be inspected before each use and daily during use.

- Slings found to be defective must be destroyed.
- All wire rope and slings must be taken out of service when wear or corrosion exceeds that allowed by the manufacture.

Each sling should bear a tag indicating its working load limit (WLL).

All slings shall be visually inspected each day they are in use and whenever they may have been damaged during a lift. A thorough inspection by a trained person should be made at least every month.
Slings that do not meet standard requirements should be removed from service and either discarded or reconditioned in accordance with the recommendations of the manufacturer.

OSHA specifies that wire rope slings shall be removed from service immediately if any of the following conditions are present:

1) Broken wires: For single part slings, ten (10) randomly distributed broken wires in one rope lay, or five (5) broken wires in one strand of one rope lay.

2) Metal loss: Wear or scraping of one-third (1/3) the original diameter of outside individual wires.

3) Distortion: Kinking, crushing, bird caging or other damage that distorts the rope structure. The main think to look for is wires or strands that are pushed out of their original positions in the rope.

4) Heat damage: Any metallic discoloration or loss of internal lubricant caused by exposure to heat.

5) Bad end attachments: Cracked, bent or broken end fittings caused by abuse, wear or accident.

6) Bent hooks: No more than fifteen percent (15%) over the normal throat openings, measured at the narrowest point, or twisting of more than 10 degrees is permissible.

7) Metal corrosion: Severe corrosion of the rope or end attachments that has caused pitting or binding of wires should be cause for replacing the sling. Light rusting usually does not affect the strength of a sling.

In addition to the seven conditions previously listed, the following are also important:

1) Pulled eye splices: Any evidence that eye splices have slipped, tucked strands have moved or pressed sleeves show serious damage may be sufficient cause to reject a sling.

2) Unbalance: A very common cause of damage is the kink, which results from pulling through a loop while using a sling, thus causing wires and strands to be deformed and pushed out of their original position. This unbalances the sling, reducing its strength.

Additional inspections should be performed at regular intervals based on:

1) Frequency of sling use.

2) Severity of service conditions.

3) Nature of lifts.

4) Prior experience based on service life of slings used in similar circumstances.

**Shackles**

- Shackles used in lifting should be visually inspected before making a lift.
- Check pin for straightness and complete seating.
- Look for cracks, deformities and evidence of heat damage or alterations.
- Check the distance between eyes for signs of opening up.
- Check eyes for roundness and twisting.
- Shackles with the above conditions and those worn by more than 10% of original diameter in the crown or pin must be removed from service and discarded.
- Shackles which do not clearly show the rated capacity should not be used.
**Hooks**

All hooks on hoisting equipment must be thoroughly inspected for wear and defects each day that they are used. Sling hooks must also be visually inspected prior to making a lift.

- Check for wear in the saddle or cracks in hook.
- Check for heat damage or alterations to the hook (Never weld on a hook.)
- Check eyes, swivels and shanks for wear and twisting. Be sure to check the throat opening. An overloaded or weakened hook will have an increased throat opening.
- The latch should open freely and close securely.
- Hooks on blocks and ball assemblies should be checked for free rotation.
- Hooks shall be removed from service and discarded if any cracks are found or if the throat is opened more than 15% from the original opening or if twisted more than 10% from the original plane.

**Load Binders**

Binders are a valuable piece of equipment in maintaining the integrity of valuable cargo. The load binder can be used very effectively if used correctly and safely.

There are many types of binders that offer good mechanical advantage. Lever type binders have a 25 to 1 ratio mechanical advantage. Ratchet type binders offer a 50 to 1 mechanical advantage.

Safety and Maintenance Instructions:

- Always hook binders so you can operate while on the ground.
- Position handle so it can be pulled downward.
- Make sure you have good footing.
- Cheater pipes are not recommended, but if used, cheater pipe should extend full length of cheater handle.
- Secure handle to chain by wrapping the loose end of chain around the handle and tight chain.
• When releasing the handle move handle with caution, it may whip, keep body clear.
• Never use cheater to release binder.
• If releasing binder by hand, always use an open hand and push upward.
• Check binder for wear, bending, cracks, nicks or gouges and if present, do not use binder.
• Routinely lubricate pivot and swivel point and screw threads of ratchet.

**Spreader Bars and Equalizer Beams**

Spreader bars come in many sizes and configurations with movable or fixed hooks.

**Safety and Maintenance Instructions:**
• Apply inspection from wire rope and sling inspection.
• Never use a damaged lifting device.
• Do not exceed rated load capacity of lifting device.
• Avoid shock loads due to sudden starts and stops.
• Make sure lifting ropes and chains are not twisted or kinked.
• Never lift personnel.
• Maintain load clearance during moving of equipment.

**Personal Protective Equipment**

Hard hats must be worn on all construction sites and in any area where there is a hazard of falling objects.

Proper eye protection will be used.

Steel toed shoes are required.

Hearing protection will be used where necessary.

**Definitions**

**Bird Cage** means distortion damage to wire rope that resembles a small bird cage in appearance.

**Conventional Rigging** (equipment) means hardware or equipment used to safely attach a load to a lifting device.
• Conventional rigging is commercially available, over-the-counter equipment, used in the manner for which it was designed.

**Crane** is a machine used for lifting and lowering a load vertically, and that has a hoisting mechanism as an integral part.
• Moving loads horizontally can be achieved with proper rigging.

**Hoist** is a device that applies a force for lifting or lowering.
**Tag line** is a line tied to a suspended load that is used to guide and manipulate the load.
10. FIRST AID AND CARDIO PULMONARY RESUSCITATION (CPR)

Purpose

The purpose of this procedure is to provide company employees with information on providing basic first aid treatments.

The implementation of this procedure will enable the company to be in compliance with OSHA 29 CFR 1910.20.

Scope

Company personnel may be assigned to customer locations where there are no medical facilities and they might be called upon to render basic first aid and CPR if properly trained.

This procedure applies to all company and customer work sites.

- These measures are of extreme importance since, in some cases, the actions taken during the first few minutes may determine the severity of the injury.
- Good intention but inept assistance may be worse than no assistance at all.

Responsibilities

The Safety Coordinator shall keep current a valid Medic First Aid (or equivalent) training certification.

Additional responsibilities include:

1) That a Blood Borne Pathogens and Eye Wash Kit are kept with each First Aid Kit.
2) Making sure all First Aid kits consist of appropriate items and stored in weather proof containers with individually sealed packages for each type of item.
   a. The contents of the first aid kit shall be checked before being sent out to each job and at least weekly to ensure that the expended items are replaced.
3) Making sure that a communication system is available for contacting the necessary ambulance service.
4) Providing properly stocked first aid kits to company personnel.

Employee responsibilities include:

1) Ensuring that his co-workers know that he is wearing a Medic-Alert bracelet.
2) Ensuring that his co-workers know his/her problem and the exact treatment that should be provided in an emergency.
3) Inform the Safety Coordinator of his condition.
4) Making sure that they know the location of all First Aid kits and eyewash stations when working on a client's location.

In the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. Adequate first aid supplies shall be readily available.
Provisions shall be made prior to commencement of a project for prompt medical attention in case of serious injury.

First aid supplies shall be easily accessible.

Proper equipment for prompt transportation of the injured person to a physician or hospital, or a communication system for contacting necessary ambulance service, shall be provided.

In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.

Procedure

This written program regarding First Aid will help company personnel in handling on the job accidents/incidents.

The first aid measures indicated here should be given prior to the arrival of medical personnel or taking a patient to a medical facility.

- All personnel should know whether any of his/her co-workers has a medical problem for which special care must be provided should an emergency arise.

When faced with having to provide first aid, the employee should assess the situation and give immediate and appropriate care.

In the case of an accident in which serious, incapacitating injury has occurred, the injured person should be moved as little as possible.

The goals of first-aid treatment in an emergency are to:

1) Preserve life.
2) Prevent the condition from worsening.
3) Protect the victim from any further harm.
4) Aid recovery.
5) Provide reassurance.
6) Make the victim as comfortable as possible.

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

Handling an Emergency Situation

Remaining calm while helping the victim will help him/her to keep calm and cooperative.

- If the victim becomes anxious or excited the extent of the damage from the injury could be increased.
- Plan quickly what you need to do.
- Learn basic procedures, or have your first aid manual available, so you can care for the victim.
- Send For Professional Help.
- Know your local emergency telephone numbers.
• Let the victim know that help is on the way and try to make them as comfortable as possible.
• Showing care and concern for the victim can give them hope.

First Aid Treatments for Common Injuries

Small Cut

1) Cleanse area thoroughly with soap and warm water, carefully washing away any dirt.
2) Apply direct pressure to wound until bleeding stops.
3) Put sterile bandage on wound.
4) If cut is deep, get to a doctor as quickly as possible.

Puncture Wound or Large Gash or Animal Bite

1) Cleanse area thoroughly with soap and warm water, carefully washing away any dirt.
2) Apply direct pressure to wound until bleeding stops.
3) Put sterile bandage on wound.
4) Victim should be treated by a doctor.
5) Whether the cut or bite is large or small, a doctor should be contacted if swelling, increased redness, or drainage occurs, or if there are flu-like symptoms, fever, or swollen glands.

Burns

First Degree Burns

1) First degree burns damage the outer layer of skin.
2) Characteristics include:
   a. Redness
   b. Mild pain
   c. Swelling
3) Treatment of First Degree Burns
   a. Immediately submerge the affected part in cold water.
   b. Hold the burn under cold running water, or place cold, wet cloths on the affected area until the pain decreases.
   c. Cover with a clean, dry gauze dressing for protection.

Second Degree Burns

1) Second degree burns affect the second layer of skin.
2) Characteristics include:
   a. Blisters
   b. Rough, red skin
   c. Swelling
   d. Extreme pain
3) Treatment for Second Degree Burns
   a. Immerse in cold water or have cold, wet cloths applied to it immediately.
   b. Gently blot area dry.
c. Do not rub.
   i. Rubbing may break the blister, opening it to infection.

d. Cover wound with dry, sterile bandage.

e. If the burn is located on arm or leg, keep limb elevated as much as possible.

f. Seek medical attention

4) Second degree burns should heal within a few weeks.

Third Degree Burns

1) Third degree burns affect to the third layer of skin.
2) Characteristics include:
   a. Whitish or charred appearance.
   b. Clothing adhered to the burn.
   c. Severe damage to skin and flesh.
3) Treatment for Third Degree Burns
   a. Do not remove any clothing near or at the site of the burn.
   b. Do not apply cold water or medication to the burn.
   c. Place clean, dry cloths (such as strips of a clean sheet) over the damaged area.
   d. If burns are on arms or legs, keep the limbs elevated above the level of the heart.
   e. If victim has burns on face, check frequently to make sure he is not having difficulty breathing.
   f. Get victim to a hospital as soon as possible.

Chemical Burns (Corrosive Materials)

1) Chemical burns may be first, second or third degree.
2) Where the eyes or body may be exposed to corrosive materials, suitable facilities for a quick drenching or flushing of the eyes and body shall be provided within the work area.
3) Treatment for chemical burns
   a. Remove clothing on or near the burn area.
      i. Never pull clothing over the head with a chemical burn.
      ii. You may need to cut the clothing.
   b. Wash the area thoroughly with low pressure water for at least 20 minutes.
   c. Apply a clean dressing to the area.
   d. Get medical attention as soon as possible.
   e. Never put butter or grease on a burn.
4) Seek medical attention if:
   a. Victim is a child or elderly.
   b. Burn covers more than one body part.
   c. Burn is located on any sensitive area of the body (hands, face, feet, etc.).
   d. Burn is third degree.
   e. Burn is caused by chemicals.

Abrasions (Scratches)

1) Wash thoroughly with soap and warm water.
2) If the wound bleeds or oozes, bandage it to protect it from infection.

**Signs of an Infected Wound**

1) Swelling
2) Redness
3) Pain
4) Fever
5) Presence of pus

**Hypothermia**

1) Symptoms of hypothermia include vigorous, uncontrollable shivering.
2) As hypothermia progresses a victim can experience:
   a. Dizziness
   b. Light headedness
   c. Muscular stiffness.
3) Treatment of Hypothermia:
   a. The body temperature must be raised slowly.
   b. Warming the victim's body too quickly could cause tissue damage.
   c. Take the victim indoors or to an area of shelter.
   d. If the victim's clothes are wet, remove them and replace them with warm, dry clothes as soon as possible.
   e. The victim may want to wrap up in a blanket and sit near a heater or fireplace until he is warm.
   f. If the victim is fully conscious, give him/her a warm liquid such as:
      i. Hot apple cider
      ii. Soup
   g. The victim should not drink liquids that contain caffeine.
   h. Make sure the victim gets medical attention as soon as possible.

**Nosebleeds**

1) Nosebleeds can be caused by:
   a. Nose injury
   b. Strenuous activity
   c. High blood pressure
   d. Exposure to high altitudes
   e. Blowing your nose too hard
2) Treatment of Nosebleed:
   a. Sit down
   b. Lean slightly forward to prevent blood from running into your throat.
   c. Place cold, wet cloths on your nose to constrict the blood vessels in your nose and stop the bleeding.
   d. If blood is coming from only one nostril, press firmly at the top of that nostril.
   e. If both nostrils are bleeding, pinch your nostrils together for at least 10 minutes.
   f. If bleeding continues, apply pressure for another 10 minutes.
   g. If the bleeding is the result of direct injury to the nose, only gentle pressure should be applied.
h. If heavy bleeding persists or if nosebleeds recur frequently, consult a physician.

**Electrical Shock**

1) Symptoms of electric shock in unconsciousness:
   a. Breathing difficulty.
   b. Burns at contact points.
   c. Muscle spasms.

2) Treatment of Electrical Shock:
   a. Remove the victim from the source of electricity before you touch him.
   b. Either turn off the master switch to disconnect the power, or use a nonmetal, dry object such as a stick to pull the wire or electrical source away from the victim's body.
   c. Seek medical attention immediately.

**Heatstroke**

1) Heatstroke is a profound disturbance of the heat-regulating mechanism of the body, also known as sunstroke.
   a. It is characterized by extremely high body temperatures and sometimes by convulsions and coma.
   b. The skin is usually hot and dry because the body-cooling process of sweating has ceased.
   c. However, in some cases the skin may feel relatively cool because blood vessels just below the skin have constricted and the overheated blood is not being carried to the surface.

2) Heatstroke is a rare disorder and is more common among elderly and obese people and those with debilitating diseases.

3) Heatstroke, unlike heat exhaustion, is considered a serious threat to life; treatment must be swift to prevent death or serious brain damage from high body temperature.

4) The body should be cooled as quickly as possible by removing the patient to a cool shady place and applying cold water or ice water to the skin.

5) Treatment of Heatstroke:
   a. Cool the body of a heatstroke victim immediately.
   b. If possible, put him in cool water; wrap him in cool wet clothes; or sponge his skin with cool water, rubbing alcohol, ice, or cold packs.
   c. Once the victim's temperature drops to about 101 °F (38 °C), you may lay him in the recovery position in a cool room.
   d. If the temperature begins to rise again, you will need to repeat the cooling process.
   e. If he/she is able to drink, you may give him some water.
   f. Do not give a heatstroke victim any kind of medication.
   g. Watch for signs of shock while waiting for medical attention.

**Heat Exhaustion**

1) Heat Exhaustion is a condition caused by overexposure to sunlight or another heat source and resulting in dehydration and salt depletion, also known as heat prostration.
2) The symptoms are:
   a. Severe headaches
   b. Weakness
   c. Dizziness
   d. Blurred vision
   e. Sometimes unconsciousness.
3) However, the body temperature is not elevated as in heatstroke.
4) The condition is usually temporary and rarely fatal.
5) Water, mineral, and ion depletion may be so severe that painful spasms of the muscles, commonly called heat cramps, occur.
6) Treatment includes administering a supplemental solution to replace the water, minerals, and ions that have been depleted from the body.

Medical Assistance

1) Medical assistance should be requested as soon as possible.
2) Calling for assistance should be done by someone other than the person helping the victim.
3) After medical personnel arrive they should take charge, with workers and the company personnel providing any additional help they request.
4) No company personnel should condone treatment by anyone other than a doctor, nurse, or other medically trained person.
5) Company personnel should also ensure that any person who has been injured, or is ill to such a degree that he/she may have trouble reaching a medical station, should be assisted on location.
   a. Company personnel may designate someone to help the person affected or to render help himself/herself.

Training Requirements

When required, company personnel will be trained on the following topics:

1) First Aid and CPR

Training Frequency

Company personnel will be trained to the following schedule:

1) As required.
2) Refresher every 24 months.

Definitions

Fracture is a break or crack in a bone.

Heat Exhaustion is a condition where the body temperature rises above normal and the person feels sick and dizzy.

Heat Stroke is a condition where the body loses its ability to regulate temperature and internal temperature rises to a dangerous level (104 °F and above).

Hypothermia is a condition where the body becomes too cold (below 95 °F).

Hypoxia is low levels of oxygen.
Laceration is a rough, ripped wound.

Unconsciousness is the interruption of brain’s normal activity such that a person is no longer aware of their surroundings.
11. **BLOOD BORNE PATHOGENS PROGRAM**

**Purpose**

The purpose of this procedure is to inform all employees of the company Exposure Control Plan.

This procedure also provides awareness information regarding universal precautions necessary for protecting company employees from exposure to blood borne pathogens.

Linear Controls, Inc. has developed the following exposure control plan to comply with the OSHA Blood Borne Pathogens standard 29 CFR 1910.1030.

**Scope**

The company has determined that company personnel are not Designated Emergency First Responders as defined under the company Exposure Control Plan.

Field personnel do not have job duties that include reasonably anticipated occupational exposure, or contact with blood, or other potentially infectious materials.

**Procedure**

Due to the fact that Linear Controls, Inc. can “reasonably anticipate exposure” of blood or other potentially infectious materials to their employees, we have established and implemented this Exposure Control Plan. It applies to all occupational exposures to blood or other potentially infectious materials. A copy of the plan is accessible to employees in accordance with 29 CFR 1910.1020(e).

**Exposure Determination:**

As per 29 CFR 1910.1030 the company has determined that company personnel do not have job duties that include reasonably anticipated occupational exposure, contact with blood, or other potentially infectious materials.

1) This exposure determination was made without regard to the use of personal protective equipment.
2) The information contained in this procedure is for the employee’s personal knowledge to prevent exposure of them to blood borne pathogens and to direct them to the Safety Coordinator for follow-up evaluation in the event of accidental on-the-job exposure.
3) Employees are not required to provide first aid or CPR services as a part of their job duties, but may administer first aid or CPR on a “Good Samaritan” basis. Employees will have the opportunity to attend training for first aid and CPR for their own personal well being.
4) Employees are not trained in cleanup and must not attempt a biomedical waste cleanup.
5) Personal protection is the key to prevent transmission of blood borne pathogens.
Hepatitis B Vaccination (HBV)

The employees are required to be trained in the knowledge that certain pathogenic microorganisms may be present in human blood and can cause disease in humans.

These pathogens include, but are not limited to, Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV).

Blood Borne Pathogens are transmitted by:
1) Non-protected sexual contacts.
2) Intravenous drug use by sharing of needles and syringes.
3) Transplacental transmission between mother and fetus during pregnancy.
4) Contact with blood or other potentially infectious body fluids.

Hepatitis B vaccination will be made available at no cost to all employees after they have been trained or within 10 working days of initial assignment to a position that could have occupational exposure.

The exceptions will be:
1) The employee has previously received the complete Hepatitis B series.
2) The company does not make participation in the prescreening program a prerequisite for receiving a Hepatitis B vaccination.
3) If the employee initially declines a Hepatitis vaccination but later while still covered under the standard decides to accept the vaccination, the company will make the vaccination available at that time.
   a. Any employee who declines the Hepatitis B vaccination must sign an OSHA required waiver indicating refusal. (Appendix A.)
4) If a routine booster dose of Hepatitis B vaccination is recommended by the U.S. Public Health Service at a future date, booster doses will be made available.

Universal Precautions

In general, the best method of ensuring the health/safety for workers at risk is to understand and follow the concept of UNIVERSAL PRECAUTIONS as it applies to an employee's duties and work practices.
1) This concept refers to the assumption that all blood and bodily fluids are contaminated with pathogens.
2) Universal precautions while administering first aid or CPR must include:
   a. Engineering and Work Practice Controls
   b. Clean Up Procedures
   c. Work Area Restrictions
   d. Housekeeping
   e. Hazardous Waste Disposal
   f. PPE

Engineering and Work Practice Controls

Engineering and work practice controls shall be used to eliminate or minimize employee exposure.

Hand washing is a primary work practice control.
1) Hands must be thoroughly washed with soap and water, and dried with single use towels or a hot air dryer, after all direct contact with blood or other potentially infectious materials, or after handling soiled or contaminated equipment.

2) Hands and other skin surfaces must be washed immediately if contaminated with blood or other potentially infectious materials or body fluid.

3) Hands must be washed after gloves are removed.

4) The company will provide hand washing facilities to ensure that employees use them following exposure to blood or body fluids.
   a. If this is not available or feasible, then alternative methods, such as antiseptic hand cleaners, in conjunction with clean cloths or paper towels or antiseptic towelettes will be provided.

5) When these alternative methods are used, employees shall wash their hands (or other affected area) with soap and running water as soon as feasible thereafter.

6) The Engineering Control procedures will be examined and maintained, revised or replaced yearly to ensure their effectiveness.

Clean Up Procedures

In the event of an incident involving the release of blood or other potentially infectious material, the area should be barricaded to keep people from tracking the blood or other potentially infectious material into other areas and the area shall be decontaminated.

1) A biomedical waste cleanup shall be done only by designated emergency responders.

2) Our company personnel are not trained in cleanup and must not attempt a biomedical waste cleanup.

3) Items such as clothing, medical gloves, etc., that have been contaminated with blood or other potentially infectious materials must be placed in the red biomedical waste bags or a container labeled BIOHAZARD, and given to the emergency responders for disposal.

Work Area Restrictions

A copy of the Blood Borne Pathogens Exposure Control Plan will be kept in the home office and made available to any employee, or his designee, upon request.

1) In work areas where there is a reasonable likelihood of exposure to blood or other potentially infectious materials, employees are not to:
   a. Eat
   b. Drink
   c. Apply cosmetics or lip balm
   d. Smoke
   e. Handle contact lenses.
   f. Food and beverages are not to be kept in refrigerators, freezers, shelves, cabinets, counter tops or bench tops where blood or other potentially infectious materials are present.

2) Mouth pipetting/suctioning of blood or other potentially infectious materials is prohibited.

3) All procedures will be conducted in a manner which will minimize splashing, spraying, splattering, and generation of droplets of blood or other potentially infectious materials.

4) Engineering controls shall be examined and maintained or replaced in order to ensure continued effectiveness.
Housekeeping

Exposed surfaces in first aid rooms, ambulance seats, reusable emergency equipment, environmental surfaces, etc., shall be decontaminated after contact with blood or other infectious materials by wiping with an appropriate disinfectant/germicide.

Contaminated laundry shall be handled with care and placed in leak proof, labeled and/or color coded bags at the worksite.
1) Gloves shall be worn by employees who work with contaminated laundry.

Potentially Infectious Waste Disposal

All medical wastes, blood specimens and other body fluids shall be placed in containers that are color-coded and exhibits the biohazard symbol.

Medical wastes include but are not limited to:
1) Needles
2) Disposable equipment
3) Soiled dressings
4) Sponges
5) Used gloves
6) Blood soaked clothing or other fabric

The disposal containers shall be constructed so that they are closeable, leak-proof, puncture-resistant, fluorescent orange, orange-red or red in color, displaying the biohazard legend.

Personal Protective Equipment

1) PPE shall be used unless the employer shows that employees temporarily decline to use PPE under rare circumstances.
2) When treating a person one should assume that all human blood and fluids are infected and place a barrier between the fluids and the persons responding to the medical emergency.
3) Medical gloves must be worn when there is the potential for direct skin contact with blood or other potentially infectious body fluids and materials, or when handling items or surfaces soiled with blood or other potentially infectious body fluids or material.
   a. Gloves will be changed when visibly soiled, torn, punctured, or when their ability to function as a barrier is compromised.
   b. Single use gloves will not be reused.
4) Safety glasses with side shields will be used when there is a potential for eye contamination through splashing or spraying.
5) If available, resuscitation will be conducted with mouthpieces or resuscitation bags (bag, valve, mask resuscitator).
6) When the possibility of occupational exposure is present, PPE shall be provided at no cost to the employee.
7) The company will ensure that appropriate PPE in the appropriate sizes is readily accessible for all personnel involved.
8) PPE will be properly cleaned, laundered, stored and disposed of.
a. The company will repair and/or replace PPE as needed to maintain its effectiveness.

Post Exposure Evaluation and Follow-Up

All exposure incidents must be reported, investigated and documented. When an employee has an exposure incident, it must be reported to the Safety Coordinator.

Following a report of an exposure incident, the exposed employee must immediately receive a confidential medical evaluation and follow-up.

All employees who have an exposure incident will be offered post-exposure evaluation and follow-up in accordance with the OSHA standard.

Information Provided to the Health Care Professional

The Safety Coordinator will make sure that the health care professional responsible for the employee’s HBV vaccination and post exposure evaluation receives the following additional information:

2) A written description of the exposed employee’s duties as they relate to the exposure incident.
3) Written documentation of the routes of exposure and circumstances under which exposure occurred.
4) Results of the source individual’s blood testing (if available.)
5) All medical records relevant to the appropriate treatment of the employee, including vaccination status.

Health Care Professional’s Written Opinion

The Safety Coordinator will obtain and provide the employee with a copy of the evaluating health care professional’s written opinion within 15 days of the completion of the evaluation.

Labels and Signs

1) Warning labels shall be affixed to containers of regulated waste or other potentially infectious material.
2) The label shall include the biohazard logo depicted in OSHA 29 CFR 1910.1030 (g) Communication of hazards to employees.
3) The labels shall be fluorescent orange or orange-red or predominantly so, with lettering or symbols in a contrasting color.
4) Individual containers of blood or other potentially infectious materials (OPIM), placed in a labeled container during storage, transport, shipment or disposal, do not need to be labeled.

Recordkeeping Information

The Safety Coordinator has the overall responsibility for the effectiveness of the program and will maintain training and medical records for each employee covered under the
company Exposure Control Plan, or for an employee involved in an exposure incident in
accordance with OSHA 29 CFR 1910.1020 (h).
- All records are confidential and will not be disclosed without the employee’s
  express written consent.
- A copy of the employee’s records may be released, with the employee’s written
  consent, to any person within or outside of the workplace.
- These records shall be made available upon request to the Assistant Secretary
  of Labor for OSHA, to the Director of the National Institute for Occupational
  Health and Safety, U.S. Department of Health and Human Services or to their
designated representatives.
- These records will be kept for the duration of the employee’s employment plus
  30 years to comply with 29 CFR 191020 (h).

Availability of Records

Employees may review their medical and training records during normal business hours
and copies of their records will be provided to them or their authorized representative
upon written request.
- These records shall be made available upon request to the Assistant Secretary
  of Labor for OSHA, to the Director of the National Institute for Occupational
  Health and Safety, U. S. Department of Health and Human Services or to their
designated representatives for examination and copying.
- Training records shall be maintained for three (3) years from the date of training.
- The company will comply with the requirements involving transfer of records set

Management shall ensure that a copy of the Exposure Control Plan is accessible to
employees in accordance with 29 CFR 1910.1020(e).

Training Requirements

Training records shall include the following:
1) Date and Content of the Training
2) Names and Job Titles of Persons Attending
3) Instructor Name and Signature

Blood Borne Pathogen awareness training will be conducted for all employees who have
or are subject to have occupational exposure and will include instruction on the following
topics:
1) Applicable regulations on blood borne pathogens.
2) General explanation of the epidemiology and symptoms of blood borne
diseases.
3) Modes of transmission for blood borne disease.
4) Recognition of tasks that could involve exposure to potentially infectious body
   fluids and materials.
5) Methods, work practices, and protective equipment that will prevent or reduce
   exposure.
6) Proper handling and disposing of personal protective equipment.
7) Hepatitis B vaccination information.
8) Selecting personal protective equipment.
9) Appropriate emergency actions including incident reporting and medical follow-up.
10) Explanation of signs, labels, and color coding.
11) The contents of this procedure.

Training Frequency

Company personnel will be trained according to the following schedule:
1) Initial Assignment.
2) Annually.

Definitions

**Blood Borne Pathogen**
- Pathogenic microorganisms which are present in human blood and can cause diseases in humans.
- The pathogens include, but are not limited to, Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV).

**Contaminated** is the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

**Contaminated Laundry** is laundry that has been soiled by blood or other potentially infectious material or that may contain sharps.

**Disinfect** means to inactivate virtually all recognized pathogenic microorganisms but not necessarily microbial forms on inanimate objects.

**Engineering Controls** are controls that isolate or remove the blood borne pathogens hazard from the workplace.
- Examples of engineering controls include containers for disposal of sharp objects and self-sheathing needles.

**Exposure Incident** is a specific eye, mouth, or mucous membrane, non-intact skin, or parental contact with blood or other potentially infectious materials.

**Occupational Exposure** is reasonably anticipated skin, eye, mucous membrane or potential contact with blood or other potentially infectious materials that can result from performance of an employee’s job.

**Other Potentially Infectious Materials** means human body fluids such as:
- Semen
- Vaginal secretions
- Cerebrospinal
- Synovial
- Pleural
- Pericardial
- Peritoneal
- Amniotic
- Saliva
- Any body fluid that is visibly contaminated with blood.
- All body fluids in situations where it is difficult or impossible to differentiate between body fluids.
- Any unfixed tissue or organ cultures and HIV or HBV containing culture medium or solutions and blood.
- Organs or other tissues from experimental animals infected with HIV or HBV.

**Parenteral** means the piercing of the mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, or abrasions.
12. LADDER SAFETY

Purpose

The purpose of this procedure is to identify for company personnel the guidelines for selection, proper use, inspection and maintenance of portable ladders. Deviations should be reviewed with the supervisor in charge before being implemented.

Procedures

Ladder Requirements

1) Fiberglass is the preferred construction material, but ladders made of wood or aluminum is acceptable.
2) All portable wooden ladders used will be heavy duty, Type IA construction that meets OSHA requirements for industrial ladders.
3) Wooden ladders shall not be painted.

Work Practices

1) Never use aluminum ladders to work on or near electrical installations near exposed electrical circuits.
2) Ladder rungs, cleats, and steps shall be parallel, level, and uniformly spaced, when the ladder is in position for use.
3) Ladders shall not be loaded beyond the maximum intended load for which they were built, or beyond the manufacture's rated capacity.
4) Portable ladders must be long enough to reach the intended work location. The user must not stand above the third rung from the top of straight or extension ladders or the second tread from the top of stepladders.
5) Ladders shall not be placed on boxes, barrels or other unstable bases to obtain additional height.
6) Extension ladders must not be taken apart in order to use the two sections separately.
7) The bottom of the straight or extension ladder must be placed with its feet approximately ¼ the ladder length away from the wall or object that is supporting the top of the ladder. Both feet must rest on a solid, level surface.
8) When using a straight or extension ladder, both rails must be placed against a surface that is capable of supporting the applied load. Do not support the ladder on the top rung.
9) The top of all straight and extension ladders must be secured with rope, chain or heavy gauge wire to prevent the ladders from slipping. Alternately, someone must hold the base of the ladder if tie-off is not possible.
10) Never fold and use stepladders as straight ladders.
11) Stepladders must be fully opened, spreader locked and placed so that all four feet are level.
12) Where practical, stepladders over ten feet in length should have the top tie-off. Alternately, either outriggers must be used or someone must hold the base of the ladder.
13) Only one person is allowed on a ladder at a time, except stepladders that have been designed for both sides to be used.
14) Use both hands for support while climbing ladders. Tools and other objects must be carried on a tool belt or pulled up using a rope.
15) Always face the ladder when climbing up or down.
16) If a ladder appears unstable, then someone should hold the base of the ladder until the top is securely tied.
17) Get off ladders to move them. Never “walk” a ladder.
18) When reaching from a ladder to do work, always keep the trunk of your body between the ladder rails.
19) When a ladder is used to gain access to an elevated structure such as a roof, the top of the ladder must extend at least three feet above the point of support (roof edge, pipe, etc.)
20) Barricade or guard ladders against being bumped when placed in aisles, walkways, roads or at a doorway.
21) Each time a portable ladder is used, it shall be inspected by a competent person for visible defects. Ladders with defects that cannot be immediately corrected shall be removed from service and tagged “Danger – Do Not Use” until repaired or replaced.
22) Ladders shall be inspected after any occurrence that could affect their safe use.
23) Ladders shall be used only for the purpose for which they were designed.

**Maintenance**

Ladders having loose or defective parts may be repaired when possible.

Ladders with broken or bent side rails or damaged steps must be discarded.
13. LOCK OUT/TAG OUT (CONTROL OF HAZARDOUS ENERGY)

Purpose

Due to the fact that the health and safety of our employees are our top priority, Linear Controls, Inc. has developed this Lock Out/Tag Out program.

This program is to establish requirements for isolating energy sources of machines, electrical systems, steam, hydraulic systems, tension, gravity, valves, and associated systems during installation, service, maintenance, repair, overhaul, testing, or any other situation that could result in unexpected energization, startup, or release of stored energy that could cause endangerment to personnel, as required by OSHA 29 CFR 1910.147.

Scope

This procedure applies to all company personnel while inspecting and/or doing work on Linear Controls, Inc. equipment and client’s equipment at the client’s facility.

In most cases when working at a client’s location their Lock Out/Tag Out procedure will be used.

In the event that the client has none, a site-specific procedure based on the company’s procedure will be developed and utilized.

Responsibilities

Management is responsible for implementation and control of this Lock Out/Tag Out procedure.

Additional responsibilities include:
1) Conduct periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this procedure are being followed.

The Safety Coordinator is responsible for providing assistance in the implementation of this Policy.

Additional responsibilities include:
1) Yearly evaluating the Program implementation to ensure its effectiveness.
2) Make any necessary changes or updates are done.
3) Ensure that all authorized employees are provided necessary lock out/tag out kits.

Company personnel are responsible for ensuring that they obtain the initial training on the company Lock Out/Tag Out Program.

Additional responsibilities include:
1) Follow all established program procedures.
Customer or contractor personnel involved in operations relating to equipment or machinery lockout that affects Linear Controls, Inc. employees, must comply with their own, or with Linear Controls, Inc. procedures.

Customer management must authorize the disabling of equipment by having maintenance personnel Lock Out/Tag Out the facilities being worked on to prevent an unsafe condition.

Procedure

This procedure is being enacted to define and implement the specific activities that require the use of Lock Out/Tag Out Procedure.

- Specific procedural steps for placement, removal and transfer of lockout devices or tag out devices and the responsibility for them.
- Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, and other energy control measures.

Normal servicing and maintenance of equipment such as lubricating, cleaning, and making minor adjustments that do not require the removal of the machine guards or reaching beyond the guards does not require the use of this Lock Out/Tag Out Procedure.

All employees shall be informed, trained, and required to use this program.

Operations process personnel may close and open valves for operational purposes without tagging when work is not to be performed on equipment.

Equipment or machines which may be disconnected by removing a plug with an attached cord, does not require the use of Lockout/Tag out, if the plug is removed and under the exclusive control of the person performing the servicing or maintenance.

- Methods of control may include a lockout device in the plug, or the plug shall be visible to the worker and within arms reach.

In the event that Linear Controls, Inc. personnel are working in a client's facility they will follow the procedure of the client.

All machinery/equipment capable of being locked out must be locked out.

All employees shall follow this procedure to ensure that the machinery and, or, other associated equipment is isolated from all potentially hazardous energy sources.

- Equipment should be Locked Out or Tagged Out before any services are performed during installation, commissioning, service, maintenance, repair, overhaul, testing, or any other situation that could result in unexpected energization, startup, or release, of stored energy.

Affected Employee

Affected Employee is an employee whose job requires him/her to operate or use machine or equipment on which servicing or maintenance is being performed under
Lock Out or Tag Out, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.
- Affected employees will be notified by the company or authorized employee of the application before the device is applied and after the removal of lockout or tag out devices.

**Authorized Employee**

An Authorized Employee is the only person who can lock or implement a Lock Out /Tag Out system procedure on machines or equipment so that servicing or maintenance on that machine or equipment may be performed.
- An authorized person and an affected person may be the same person when the affected employee's duties also include performing maintenance or service on a machine or equipment that have a Lock Out/ Tag Out system implemented.

**Lock Out/Tag Out Equipment**

Whenever major replacement, repair, renovation, or modification of machines or equipment are performed, and whenever new machines or equipment are installed, energy isolation devices for such machines shall be designed to accept a lockout device if applicable.
- The preferred method to isolate energy sources is with both lock and tag.
- In the event of a device not being capable of lock out, tags may be used as long as all employees in the area are notified that only tag out has been used.

*NOTE: Tags are warning devices and do not provide physical restraint like a lock.*

Locks assigned to authorized employees who are to work on the equipment shall become the personal lock of that individual, until it is removed by the individual who installed it.

Locks, tags, and uniquely identified seals used for the purpose of energy lock out/tag out shall:
1) Not be used for other purposes within the facility.
2) Be the only devices used for controlling energy.
3) Be singularly identified.

**Lock Out Devices**

A Lockout Device is a device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment.

Lock Out devices shall:
1) Be singularly identified, and the only device used for controlling energy.
2) Not be used for any other purpose.
3) Durable and capable of withstanding the environment to which they are exposed for the length of time that exposure is expected.
4) Be substantial enough to prevent removal without use of excessive force or unusual techniques, such as removal by bolt cutters.
5) Be identifiable indicating the employee applying the device.
6) Be so designed as to have the availability to mark or write on it to identify the employee applying the device.
7) Be constructed and painted so that exposure to weather conditions or wet damp locations will not cause the tag to deteriorate, or the message on the tag to become illegible.
8) Lockout devices will be constructed so they will not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

**Tag Out Devices**

If an energy source can not be locked out, a tag out system shall be utilized.

- A tag out device is a prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure.
- This will show that the energy isolating device and the equipment being controlled may not be operated until the tag out device is removed.

Tag out devices must be weather and chemical resistant.

Tag Out Devices shall:

1) Be standardized in size and color
2) Be of the same print and format.
3) Contain a warning against hazardous conditions if the machine or equipment is energized.
4) Include a legend such as the following:
   a. Do Not Start.
   b. Do Not Open.
   c. Do Not Close.
   d. Do Not Energize.
   e. Do Not Operate.
5) Be legible and understandable by all employees in the work area.
6) Be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
7) Be a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds, and having the general design and basic characteristics of being at least equivalent to a one-piece, all environmental-tolerant nylon cable tie.
   a. Tag out devices will be substantial enough to prevent inadvertent or accidental removal.
8) Be constructed and printed so that exposure to weather conditions or wet, damp locations will not cause the tag to deteriorate or the message to become illegible.
9) Not deteriorate when used in a corrosive environment.
10) State:
   a. The reason for the tag out.
   b. Name of employee who installed the tag out device.
   c. The date and time the tag was put in place.
Preparation for Shutdown

When equipment that is to be worked on has the potential for shifting, falling, starting in motion, or otherwise operating inadvertently, a physical device such as a wedge, bar, hoist, key block, adapter pin, etc., shall be in position to prevent such occurrence.

Before an authorized or affected employee turns off a machine, equipment, or system, the authorized employee shall:

1) Have the knowledge of the type and magnitude of the energy
2) Know the hazards of energy to be controlled.
3) Know the methods or means to control the energy.

Machine or Equipment Shutdown

When shutting down machines or equipment an orderly shutdown must be utilized to avoid any additional or increased hazards to the employee or equipment as a result of the equipment stoppage.

Machines and equipment will be shutdown using:

1) Procedures recommended the manufacturer

Isolation of Machines and Equipment

All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.

Preparation for Lock Out or Tag Out

A safety meeting shall be held with all affected personnel to complete:

1) A Job Safety Analysis
2) A Hazard Assessment
3) Review general instructions for Lock Out / Tag Out.

In addition, identify all hazardous energy sources, and obtain necessary locks/tags and devices to implement the lockout / tag out.

The authorized employees will notify affected employees whenever a lockout or tag out will occur, as well as when the equipment is being placed back in service.

WARNING: Do not attempt to operate any switch, valve, or other energy-isolating device where it is locked or tagged out. The company’s disciplinary procedures apply to violation of the Lock Out / Tag Out Program.

Sequence for the Application of Energy Control

The established procedures for the application of energy control shall cover the following elements and shall be done in sequence.

1) Preparation for Shutdown
a. Before the authorized or affected employee turns off or shuts down the machine or equipment, the authorized employee shall have knowledge of the type and magnitude of energy the hazards of the energy to be controlled, and the methods or means to control the energy.

2) Machine or Equipment Shutdown
   a. The machine or equipment shall be turned off or shut down using the procedures established for the machinery or equipment.
   b. An orderly shutdown shut down must be utilized to avoid any additional or increased hazards to employees as a result of the equipment stoppage.

3) Machine or Equipment Isolation
   a. All energy isolating device(s) that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.

4) Lock Out/Tag Out Application
   a. Lockout devices, where used, shall be affixed in a manner that will hold the energy isolating device in a safe position.
   b. Tag out devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of the energy isolating device from safe to off position.
   c. Where tag out devices is used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached.
   d. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device position that will be immediately obvious to anyone attempting to operate the device.

5) Control of Stored Energy
   a. Following the application of lockout or tag out devices to energy isolating devices, all stored energy (such as that in hydraulic systems, air, fuel, gas, steam, springs or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, and other wise rendered safe.
   b. If there is a possibility of re-accumulation of stored energy level, verification of isolation shall be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.

6) Verification of Isolation
   a. Prior to starting work on machines or equipment that has been shut down and lock or tagged out, the authorized employee will verify isolation and de-energization of the machine or equipment has been accomplished.

Provisions for safety testing machines when the LOTO devices must be temporarily removed:

1) Clear away tools.
2) Remove employees.
3) Remove the LOTO device.
4) Energize & proceed with testing.
5) De-energize & reapply control measures.
   a. This procedure should be documented (i.e., who performs & verifies).

Restoring Machines or Equipment to Normal Production Operations

After the servicing and/or maintenance are complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.

Prior to removing lockout devices and tags, the person responsible for starting up the equipment shall verify the completion of work and notify the affected personnel who normally work in the area of the equipment.

After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout or tag out devices.

Operate the energy isolating devices to restore energy to the machine or equipment.

Authorization for Lock Out / Tag Out removal

When the authorized employee who applied the Lock Out or Tag Out device is not available to remove it, that device may be removed under the direction of the Client Representative.

The specific procedure shall include at least the following elements:
1) Verification by the Client Representative that the authorized employee who applied the device is not at the facility.
2) Make all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tag out device has been removed.
3) Ensure that the authorized employee has this knowledge before he/she resumes work.

Procedure Involving More Than One Person (Group Lock Out/Tag Out)

Group lockout or tag out devices shall be used in accordance with the procedures required by this section including, but not necessarily limited to, the following specific requirements:

1) Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tag out device (such as an operations lock).
2) Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tag out of the machine or equipment.
3) When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tag out control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection.
4) Each authorized employee shall affix a personal lockout or tag out device to the group lockout device, group lockbox, or comparable mechanism when he or she
begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

NOTE: In the event a shift change is required, the shift supervisor shall have responsibility for safety of individual group members.

**Contractor Lock Out/Tag Out Responsibilities**

All contractors may follow their own lock out/tag out policy while performing work on company property as long as it at least meets or exceeds the company’s policy.

Prior approval of the contractor’s lock out/tag out policy must be granted prior to any work beginning.

**Training Requirements**

Initial training will be provided at the level required for the expected task to be performed, to enable employees to understand the purpose and use of the Lock Out/Tag Out Procedure.

Employees shall be trained on the following topics:

1) All employees shall be instructed in purpose and use of the energy control procedure.
2) Never removing a tag or lock/out device without authorization.
3) A tag is never to be ignored or defeated in any way.
4) The prohibition relating to attempts to restart or reenergize machines or equipment which are locked out.
5) Limitations of tags and lockout devices.
6) Tags are a warning device and do not provide physical restraint.
7) The company Lock Out/Tag Out Program.
8) Regulatory Compliance Requirements.
9) Safe application, usage, and removal of energy controls.
10) Recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the work place, and the methods and means necessary for energy isolation and control.
12) Safe Work Permit System Requirements.
13) Categories of Energy Sources.
15) Method for Lock Out and Tag Out for Electrical Sources.
17) Equipment Shutdown/Start-up.
18) Equipment Check Following Maintenance or Repairs.
20) How to isolate machinery and associated equipment for Lock Out/Tag Out.
21) Conditions for restarting machinery/equipment or removing tags.
22) Specific training requirements on tags.

The employee training certification will include:

1) Employee's name.
Training Frequency

All personnel will be trained according to the following schedule:
1) Initially upon hire Lock Out/Tag Out training shall be provided to employees as part of orientation.

Retraining shall be provided whenever:
1) There is a change in the Energy Lock Out/Tag Out Procedure.
2) When an audit reveals that there are deviations.
3) When management has reason to believe that there are inadequacies in the employee's knowledge or use of the Energy Lock Out/Tag Out Procedure.
4) There is a change in:
   a. Their job assignments.
   b. Machines or equipment.
   c. The process that presents a new hazard.
   d. In the company's Lock Out/Tag Out Procedures.

Definitions

Affected Employee is an employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tag out, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized Employee is a person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment.
- An affected employee becomes an authorized employee, when that employee's duties include performing, servicing, or maintenance covered under this section.

Capable Being Locked Out means an energy-isolating device is capable of being locked out if it has a means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it, or through use of a lockout device.
  a. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device, or permanently alter its energy control capability.

Energy Source is any source:
1) Electrical
2) Mechanical
3) Hydraulic
4) Pneumatic
5) Chemical
6) Thermal
7) Other energy

Energized means connected to an energy source, or containing residual or stored energy.
Energy Isolating Device is a mechanical device that physically prevents the transmission or release of energy, including but not limited to, the following:
1) A manually operated electrical circuit breaker.
2) A disconnect switch.
3) A manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors.

Lock is a key operated device that is substantial and durable, with tag out name, employee name, and telephone number.
- Locks shall not be used for any other purpose, i.e. personal lockers, etc.
- Contractor's locks must have identification of contractor, and phone number.

Personalized Lock are locks specified as plant energy isolation devices, which are keyed differently from any other lock with only one key for each lock and both the key and lock are maintained by an individual, while it is serving as a lockout device.

Lock Out is the placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lock Out Device is a device used to hold an energy-isolating device in a safe position and prevent the energizing of a machine or equipment.

Normal Operations is the utilization of a machine or equipment to perform its intended function.

Tag Out is the placement of a tag out device on an energy-isolating device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag out device is removed.

Tag Out Device is a prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure.

Basic Equipment Owner is the individual assigned the responsibility and authority for operations in the area where service or maintenance work is performed. The Basic Equipment Owner in typically the Foreman or associate who performs actual maintenance operation.

General Instructions for Lock Out / Tag Out of Machinery and Equipment

To Lock Out / Tag Out Equipment:
1) Identify all sources of energy and hazards associated with the machinery and associated equipment.
2) Notify all affected personnel including supervisor or manager, (i.e., machine operators, etc.) of machinery shut down and Lockout.
3) Shutdown turbo machinery and associated equipment following normal procedures.
4) Isolate turbo machinery or equipment by following the sequential shutdown procedures.
5) Lock Out / Tag Out all energy sources.
a. Attach lock with personal identification.
b. Attach completed Tag out tag.
6) Release Any Stored or Residual Energy.
7) Verify.

Effectiveness of Lock Out / Tag Out Procedure:
1) Check that no personnel are exposed, and test switches, machine controls, etc.,
to make certain the machine will not operate, and is at A Zero Energy State.
Return controls to neutral or off position after verification.

To Restart Equipment After Lock Out / Tag Out:
1) Inspect the machine or equipment.
   a. Reinstall all guards.
   b. Clear area of tools, etc.
2) Notify affected employees of restart.
3) Remove all locks and tags.
4) Turn on energy sources.
5) Test equipment.
6) Notify Affected of job completion.

Process “Out of Service” Tagging Policy and Procedure

During maintenance, repair, and testing of equipment on board offshore facilities, it is
vital that any equipment that is placed out of service must be placed back in service
immediately following such maintenance, repair, or testing. The procedures described
below will provide a guideline and a process to prevent equipment being left out of
service after maintenance, repair, and/or testing are completed.

Responsibilities

The Safety Coordinator is responsible for distributing three (3) “Out of Service” tags to
personnel that may be required to place equipment out of service for maintenance,
repair, and testing purposes.

The Safety Coordinator is also responsible for documenting the numbers of each tag
and the name of the employee to which they were assigned.

Each employee who receives “Out of Service” tags is responsible for keeping the tags in
his or her possession and must report to the Safety Coordinator if any of the assigned
tags have been misplaced.

Tagging Procedure

Unless they are placed on a device, the “Out of Service” tags are to be kept in the
possession of each employee at all times while on board offshore facilities.

“Out of Service” tags are to be used when tagging items out of service for maintenance,
repair, and testing. After the job is complete and equipment is placed back in service,
the employee must remove the “Out of Service” tag from the device and secure in his or
her possession. The employee shall verify at the end of the work shift that all tags are in
his/her possession and/or accounted for.
14. OFFSHORE SAFE PRACTICES

Purpose

Linear Controls, Inc. is vitally interested in the safety of employees and the proper procedures they should understand while working offshore.

As a result, these guidelines have been designed to assist all company personnel in knowing and complying with good safety practices while working offshore.

Scope

Effectively implemented these guidelines will ensure safe operations, thus reduce the number of job-related fatalities, illnesses, and injuries.

Responsibilities

Initially upon hire, new employees will provide Linear Controls a current Water Survival certificate/card. If the employee does not hold this current certification/card, he/she will attend the above mentioned training.

All personnel who work offshore must attend annual training on Marine Trash and Debris Awareness.

The Safety Coordinator will maintain a record of the training of each employee at a local or central location.

Documentation of the training shall be furnished to those employees whose assigned work location varies.

The Safety Coordinator shall describe requirements for work clothes and PPE for particular consideration for specific job and location.

- Shall provide the PPE or identify the safety standards for equipment that the employee must furnish.

Management will inform all personnel going offshore that the possession and use of illicit drugs, alcohol, weapons, firearms, ammunition, and explosives is prohibited while on helicopters, vessels, shore bases, or offshore platforms.

Procedures

All personnel going offshore will be instructed to:
1) Report to specific docks/terminals and report to the clerk or person in charge for further orders.
2) Park their vehicles in the approved parking areas.
3) Report to the dispatcher.
4) Enter the following on the designated transportation manifest:
   a. Name
   b. Company
   c. Destination
d. Personal Weight

e. Weight of any Baggage

Materials, equipment, tools, containers, and other items used in the Outer Continental Shelf (OCS) that are of such shape or configuration that they are likely to snag or damage fishing devices shall be handled and marked as follows:

1) All loose materials, small tools, and other small objects shall be kept in a suitable storage area or a marked container when not in use.

2) All cable, chain, or wire segments shall be recovered after use and securely stored until suitable disposal is accomplished.

3) Skid-mounted equipment, portable containers, spools, reels, and drums shall be marked with the owner's name before use or transport over offshore waters.

4) All markings must clearly identify the owner and must be durable enough to resist the effects of the environment conditions to which they may be exposed.

5) MMS PINC G-252 stipulates that the above markings cannot be made with chalk, grease pencil or crayon, parking pens, non-waterproof decals, or water based paints.

Helicopter Safety Rules and/or Guidelines

Pre-Flight

1) Be present and ready to board the helicopter at the scheduled departure time.
   a. Adhere to all procedures given by dispatch or flight crew personnel.

2) Do not approach heliport until the helicopter has landed, and the pilot has established eye contact and signaled for you to approach and board.
   a. A member of the flight crew, the HLO or a qualified platform escort must escort passengers at all times while on the helideck.

3) Always approach or leave a helicopter from the side or front in a crouched position.
   a. Remain in the pilot's field of view and be alert for signals.
   b. Never walk near the tail rotor.

4) Walk, do not run.

5) Maintain a secure hold on lightweight articles such as jackets, raincoats, safety hats, etc., when near the helicopter.
   a. Passengers shall ensure that all personal gear in the vicinity of helicopter operations is properly stored inside a bag or container.
   b. If PPE is required to be worn in or around helicopter operations, the PPE must be secured to the individual by an approved strap or method.

6) Carry gear firmly at your side, never over your shoulder or above your head.

7) When near or inside an operating helicopter, appropriate hearing protection must be worn.

8) Protect your eyes against blown dust and particles.

9) Never throw items toward, or out of, a helicopter.

10) Smoking is not permitted on a helideck or in the vicinity of helicopter operations.

In The Helicopter

1) The pilot has total authority over all operations and personnel while in or around the helicopter.

2) Load your personal gear carefully and secure it against movement.

3) Ensure baggage compartment doors (if available) are properly closed and latched.
4) The pilot will instruct all personnel on proper seating arrangements.
5) The Federal Aviation Agency requires pilots to give an orientation as part of the preflight procedures.
6) Secure seatbelts (and shoulder straps, if provided) while in flight.
7) Use helmet or headset if provided.
8) Remain in your seat unless given permission to move.
9) Smoking is not permitted.
10) Passenger use of cell phones is not permitted and cell phones must be turned off and stored during flight.
11) Personal Flotation Devices (PFD’s) are mandatory on all flights over water.
12) Do not distract the pilot during takeoff, maneuvering, or landing.
13) Familiarize yourself with onboard safety and emergency equipment.
   a. Read instructions on the operation of doors, emergency exits, and the location of the ELT (emergency locator transmitter) and other emergency equipment.
   b. Normally this will be explained to you during the safety orientation.
   c. If not, ask about these items.

In Flight Emergencies (General)
1) The pilot will inform passengers of any emergency.
2) Follow instructions of flight crew and/or pilot.
3) Do not distract the pilot.
4) Remove eye glasses and put into your pocket (you might need them later).
5) Know seatbelt fastening, tightening, releasing procedures.
6) Know the location and operation of doors and emergency exits.
7) Know the location and operation of the ELT.
8) If directed to by the pilot, or if a crash is otherwise imminent, assume brace position:
   9) Tighten seatbelt with shoulder straps, tighten and sit upright, knees together, arms folded across chest
   10) Without shoulder straps, bend forward so chest is on your lap, head on knees, arms folded under thighs.

Emergency Landing (Over Land)
1) Wait for instructions to exit, or until rotor stops turning.
2) Help others evacuate well clear of the aircraft.
3) Remove the first-aid kit and other emergency equipment if no threat of fire.
4) Administer first aid if required.
5) Remove ELT, read instructions, and activate.
6) Set up camp to be as comfortable as possible.
7) Make the site as conspicuous as possible from the air.
8) Stay near the aircraft - don't wander away from the site.
9) Always remember that help is on its way.

Emergency Landing (Over Water)
1) Listen carefully to the pilot’s over water pre-flight briefing.
2) Remain in your seat with your seatbelt securely fastened.
3) Orient yourself in relation to the exit nearest you.
4) DO NOT inflate your flotation device inside the helicopter.
5) Exit the helicopter when told to do so by the pilot.
6) In any case, do not leave the helicopter until the rotor has stopped.
7) In the event of a crash, or if the helicopter turns over in the water, wait for all motion to stop, including the inrush of water.
8) Grab a handhold, unstrap, and make your way to the exit hand-over-hand.
9) Do not let completely go of the helicopter until outside the helicopter, or you may become disoriented.
10) Inflate your flotation device and swim clear of the helicopter.

**Boat Safety Rules and Guidelines**

**Pre-Board**
1) Be present and ready to board the crew boat at the scheduled departure time.
2) Adhere to all procedures given by dispatch or crew boat personnel.
3) Do not attempt to board, or leave the boat, carrying anything that will restrict movement.
4) Equipment, personal property, etc., will be removed or taken aboard the boat by hand line.
5) Any hazardous materials must be properly identified, classified, named, packaged, marked, labeled, and manifested.
   a. The vessel captain has the full authority to refuse transportation of hazardous materials.

**On The Boat**
1) The captain has total authority over all operations and personnel while in or around the boat.
   a. Only properly licensed vessel captains shall navigate vessels.
2) Once aboard, load and secure your personal gear against movement.
3) Ensure baggage compartment doors (if available) are properly closed and latched.
4) Don't smoke unless given permission.
5) Personnel shall wear Personal Flotation Devices ("Life Jackets") during waterborne transportation as required by the boat captain, from platform to shore, and from shore to platform.
6) Know the location of Personal Flotation Devices (PFD’s).
7) Familiarize yourself with onboard safety and emergency equipment (i.e. fire extinguisher, life rafts, life boats, flares, etc.).
   a. Normally this will be explained to you during the safety orientation.
   b. If not, ask about these items.
8) The captain will inform passengers of any emergency.
9) Follow instructions of crew boat personnel and/or captain during emergency situations.

**Arrival or Departure - Offshore Facility**

If you are arriving at an offshore facility by helicopter, use the same precautions for departing the helicopter as you were instructed to do when you were boarding.

After arriving at the facility either by boat or helicopter, report directly to the office. The foreman or his designee will give you a site specific orientation.
When departing from an offshore facility by boat or helicopter always contact the person in charge of the facility or his designee.

- By doing so the field supervision will know where all personnel are in their unit at all times.
- This is very important in case of an emergency.

Transfer from, or to the crew boat, will normally be by a personnel basket or directly from the boat to the facility.

All transfer from crew boat to offshore facility, or offshore facility to crew boat, must be done while wearing a Personal Flotation Device.

Transfer between platform and boat in rough seas, will be at the discretion of the individual employee, after the boat captain indicates the boat is ready to be boarded.

The same applies regarding transfer from boat to platform.

When boarding or leaving the boat, the following practice is recommended:

1) Personnel shall wear a PFD, snugly fitted and securely fastened during personnel transfer by personnel basket or swing rope.
2) Have both hands and arms free to hold on to swing rope and/or personnel basket.
3) Do not carry luggage while transferring by swing rope and/or personnel basket.
   a. When transferring is a personnel basket, place your luggage in the bottom center of the basket. Only personal articles should be transferred in a personnel basket.
4) When transferring by personnel basket, place one foot on the outside rim of the basket and grasp the basket ropes securely. Keep your knees slightly bent.
   a. Prepare for unexpected moves, particularly in rough seas.
   b. As the basket is lifted off the deck, step onto the outside rim of the basket with the other foot. Do not lean in or out, stand straight up with knees bent.
5) Using a swing rope to board a platform should be made as the boat is finished rising on a swell.
6) Using a swing rope to board a boat from a platform should be done when the boat is at the bottom of the swell.
   a. This will let the boat rise under you and not cause a hard impact.
7) When swing from the boat to the platform, swing at the high point of the swell.
8) If in doubt, do not attempt the transfer by swing rope.
9) Only you have the authority to decide whether the transfer is safe.
10) Assist others.

Platform Orientation

Verify upon arrival with the customer representative or site safety representative and he will give you a site specific orientation covering the following:

1) Bunk assignments.
2) Quarter rules.
3) Station bills locations.
4) Pollution prevention.
5) PPE and hearing protection requirements.
6) Assignments in emergencies.
7) The proper procedures to be followed in case of fire, man overboard, and abandon platform.
8) Communication procedures.
9) Emergency signals and shutdown systems.
10) Injury reporting procedures.
11) Escape routes.
12) Locations of first-aid equipment such as first aid kits, stretchers, splints, and resuscitators.

The senior Company employee on-site will be responsible for accounting for Company personnel, and notifying the appropriate customer representative of any missing or unaccounted for personnel.

Transportation of injured personnel will normally be by helicopter, and even night flights may be available in more serious situations.
- This decision will ultimately be made by the senior customer representative on-site.

Both radio and telephone are normally available for emergency calls to shore.

The following procedures should be followed when making a “Distress Call”:
1) Make certain your radio is on.
2) Select the proper channel.
3) Speak the word “MAYDAY” three (3) times.
4) Give your name.
5) Give your location.
6) Give the nature of distress.
7) Give the kind of assistance desired.
8) Give the number of persons onboard and conditions of any injured.
9) Give the present condition of structure.
10) Give any other information which may assist the rescue team.
11) Give your listening frequency.
12) Give call sign/name of vessel in distress.
13) Say “OVER” when finished.

**Emergency Drills**

Cooperate and participate when requested to do so by customer personnel in charge of offshore platform operation.

Drills shall be conducted as if an actual emergency existed.

All personnel should report to their respective stations and be prepared to perform the duties assigned to them.

**Abandonment**

Offshore emergencies are much more serious than similar situations on shore, because of the logistical problems involved in getting personnel to a safer environment.
This is particularly true regarding escape from an emergency area, which in minutes could easily include the whole facility.

A great deal of thought has been given to the best practical means of abandonment of each unit in the shortest possible time.

Abandonment procedures should be one of the first things discussed with the customer upon arrival at the facility.

All employees should be instructed in the procedures to be followed.

Always remember:
1) Jump from a platform as the last resort.
2) The primary escape routes are:
   a. Escape capsules
   b. Stairs
   c. Ladders

**Water Survival**

If you must enter the water, abandon platform, or are in a boat/helicopter emergency do not panic.

Before going offshore, all personnel will be trained in platform abandonment/water survival.

Calmly follow the procedure below to increase your survival time.
1) To minimize body heat loss is the single most important thing you should do.
2) Take the following steps:
   a. Do not remove clothing.
   b. Instead, button, buckle, zip and tighten collars, cuffs, shoes and hoods.
   c. Cover your head if possible.
   d. A layer of water trapped inside your clothing will be slightly warmed by your body, and help insulate you from the colder water, slowing your rate of body heat loss.
   e. Put on a PFD if available.
3) Devote all your efforts to getting out of the water.
4) Act quickly before you lose full use of your hands and limbs.
5) Climb onto a boat, raft, or anything floating.
6) Right a capsized boat and climb in.
   a. Most boats will support you even if full of water.
   b. If you can not right a capsized boat, climb on top of the hull.
   c. The object is to get as much of yourself out of the water as possible.
   d. Do not attempt to swim unless it is to reach a nearby boat, another person, or a floating object on which you can climb or lean.
7) Unnecessary swimming "pumps" out warmed water between your body and your clothing, circulating new cold water to take its place.
8) Unnecessary movement of your arms and legs pumps warm blood to your extremities, where it cools quickly, reducing your survival time by as much as 50%.
9) If you cannot get out of the water, use one of the following survival techniques:
      i. Hold knees to chest to protect trunk of body from heat loss.
      ii. Wrap arms around legs and clasp hands together.
   b. Huddle.
      i. Huddling together with two or more people will extend survival time 50% longer than swimming or treading water.
   c. Remain as still as possible, however painful.
   d. Intense shivering and severe pain are natural body reflexes in cold water, which will not kill you, but heat loss will.

**Hypothermia**

Safety experts estimate that half of all drowning victims actually die from the fatal effects of cold water, or hypothermia, and not from water filled lungs.

Loss of body heat is one of the greatest hazards to survival when you fall overboard, capsize, or jump into the water.

Cold water robs the body of heat 25-30 times faster than air.

When you lose enough body heat to make your temperature subnormal, you become hypothermic.

Hypothermia is the loss of body heat, and immersion in water speeds the loss of heat.

Hypothermia does not only occur in extremely cold water.
- It can occur even in warmer waters.

Conservation of heat is the foremost objective for a person in the water.

1) To accomplish this, limit body movement.
2) Do not swim unless you can reach a nearby boat or floating object.
   a. Swimming lowers your body temperature and even good swimmers can drown in cold water.
3) If your boat capsizes, it will likely float on or just below the surface.
4) To reduce the effects of hypothermia, get in, or on, the boat.
   a. Try to get as much of your body out of the water as possible.
5) If you can’t get in the boat a PFD will enable you to keep your head out of the water.
6) This is very important because about 50% of body heat loss is from the head.

**First Aid for Hypothermia**

Any person pulled from cold water should be treated for hypothermia.

Symptoms include intense shivering, loss of coordination, mental confusion, cold & blue (cyanotic) skin, especially around lips or fingers, weak pulse, irregular heartbeat, and enlarged pupils.

Once shivering stops, core body temperature begins to drop critically.
Your goal in treating hypothermia is to prevent further body cooling.

Severe cases call for re-warming by trained medical personnel.

In all cases, arrange to have the victim transported to a medical facility immediately.

**Treatment of Hypothermia**

The body temperature must be raised slowly.

- Warming the victim's body too quickly could cause tissue damage.

Take the victim indoors or to an area of shelter.

If the victim's clothes are wet, remove them and replace them with warm, dry clothes as soon as possible.

The victim may want to wrap up in a blanket, and sit near a heater or fireplace until he is warm.

Give the victim warm liquids (for example, hot apple cider, soup, etc.) if fully conscious.

- The victim should not drink liquids that contain caffeine.

Make sure the victim gets medical attention as soon as possible.

**Personal Floatation Devices (PFD's)**

Wearing a PFD in the water is a key to survival.

PFD allows you to float with a minimum of energy expended and allows you to assume the heat escape lessening position - H. E. L. P.

This position, commonly referred to as the fetal position, permits you to float effortlessly and protect those areas most susceptible to heat loss including the armpits, sides of the chest, groin, and the back of the knees.

If you find yourself in the water with others, you should huddle as a group to help lessen heat loss.

Most adults only need an extra 7 to 12 pounds of buoyancy to keep their heads above water.

- A PFD can give that "extra lift," because they are designed to keep you floating until help comes.

A PFD must be properly selected for application and personal fit.

1) It is important to select the right one for you.
2) They come in different sizes and shapes.
3) Using the wrong type and size PFD, can be a fatal mistake.
4) When buying a PFD, always check the labels to make sure it is approved by the U.S. Coast Guard.
5) It must be well designed, fit well, and in good condition, to meet Coast Guard requirements.
6) Read the label on your PFD to be sure it is designed for people of your weight and size.

Types of PFD’s

PFD’s come in a variety of shapes, colors, and materials. Some are made to be more rugged and last longer than others; some are made to protect you from cold water; but no matter which PFD you choose, be sure to get one that’s right for you and the water conditions you expect to encounter.

Always look for the United States Coast Guard approval number on any PFD you buy.

Types of Personal Flotation Devices (PFD’s)

1) Type I - Off-Shore
2) Type II - Near-Shore
3) Type III - Flotation Aid
4) Type IV - Throwable Device
5) Type V - Special Use

Type I PFD, Off-Shore Life Jacket

A Type I PFD, or Offshore Life Jacket, provides the most buoyancy.

It is effective for all waters, especially open, rough or remote waters where rescue may be delayed.

It is designed to turn most unconscious wearers in the water to a face-up position.

The Type I PFD comes in two sizes.

1) The adult size provides at least 22 pounds buoyancy
2) The child size provides at least 11 pounds buoyancy.

Type II PFD, Near-Shore Buoyant Vest

A Type II PFD, or Near Shore Buoyancy Vest, is intended for calm, inland water or where there is a good chance of quick rescue.

This type will turn some unconscious wearers to a face-up position in the water.

- The turning action is not as pronounced, and it will not turn as many persons to a face-up position under the same conditions as a Type I.

An adult size device provides at least 15 1/2 pounds buoyancy

A medium child size provides 11 pounds.

Infant and small child sizes each provide at least 7 pounds buoyancy.

Type III PFD, Flotation Aid

A Type III PFD, or Flotation Aid, is good for calm, inland water, or where there is a good chance of quick rescue.
It is designed so wearers can place themselves in a face-up position in the water.

The wearer may have to tilt their head back to avoid turning face-down in the water.

The Type III has the same minimum buoyancy as a Type II PFD.

It comes in many styles, colors, and sizes, and is generally the most comfortable type for continuous wear.

Float coats, fishing vests, and vests designed with features suitable for various sports activities, are examples of this type PFD.

**Type IV PFD, Throwable Device**

A Type IV PFD, or Throwable Device, is intended for calm, inland water with heavy boat traffic, where help is always present.

It is designed to be thrown to a person in the water and grasped and held by the user until rescued. It is not designed to be worn.

Type IV devices include buoyant cushions, ring buoys, and horseshoe buoys.

**Type V PFD, Special Use Devices**

A Type V PFD, or special use Device, is intended for specific activities and may be carried instead of another PFD, only if used according to the approval condition on that label.

Some Type V devices provide significant hypothermia protection. Varieties include deck suits, work vests, board sailing vests, and Hybrid PFD’s.

**Inspection of PFD**

Inspect your PFD often for rips, tears, and holes, and to see that seams, fabric straps, and hardware are in good condition.

There should be no signs of water logging, mildew odor, or shrinkage of the buoyant materials.

If your PFD uses bags of kapok (a naturally buoyant material), gently squeeze the bag to check for air leaks.
  - If it leaks, it should be thrown away.
  - When kapok gets wet, it can get stiff or waterlogged and can lose some of its buoyancy.

**Maintenance and Storage Tips for PFD’s**

Follow these tips and your PFD will last for many years.
1) Do not alter your PFD to make it fit.
   a. Buy another one that does fit.
2) Do not put heavy objects on it or use it for a knee pad or fender, it can lose buoyancy when crushed.
3) Do not dry your PFD in a dryer, on a radiator, heater, or any other direct heat source.
   a. This can degrade and damage the buoyancy material.
4) Do not expose your PFD to direct sunlight for prolonged periods of time when it is not in use.
   a. Sunlight weakens some synthetic fabrics very rapidly.
5) Let your PFD drip dry thoroughly before putting it away.
6) If your PFD has been in salt water, rinse it thoroughly with fresh water.
7) Store your PFD in a well ventilated place.
8) Check and replace spent cartridges in inflatable PFD's.
9) Put your name on your PFD if you are the only wearer.
   a. It will keep you from mistakenly putting on one that is not sized for you.
10) Check the buoyancy of your PFD in the water, at least twice a year.
15. FORKLIFT OPERATIONS

Forklift Operation Program

This written Forklift Operation Program establishes guidelines to be followed whenever any Linear Controls, Inc. personnel work with powered industrial trucks at this company. The rules established are to be followed to:

- Provide a safe working environment,
- Govern operator use of powered industrial trucks, and
- Ensure proper care and maintenance of powered industrial trucks.

The procedures here establish uniform requirements designed to ensure that powered industrial truck safety training, operation and maintenance practices are communicated to and understood by the affected employee(s). These requirements also are designed to ensure that procedures are in place to safeguard the health and safety of all employees.

Administrative Duties

The Safety Coordinator is our Forklift Operation Program Coordinator. The Safety Coordinator has overall responsibility for the plan. Copies of this written program may be obtained from the Safety Coordinator.

Training

The Safety Coordinator will identify all new employees in the employee orientation program and make arrangements with the department supervisor to schedule training.

Before training a new employee, the Forklift Operation Program Coordinator will determine if the potential powered industrial truck operator is capable of performing the duties necessary to be a competent and safe operator. This is based upon his/her physical and mental abilities to perform job functions that are essential to the operation of the vehicle. These capabilities include the level at which the operator must:

- See and hear within reasonably acceptable limits. This includes the ability to see at a distance and peripherally. In certain instances, it is also necessary for the driver to discern different colors, primarily red, yellow and green.
- Endure the physical demands of the job.
- Endure the environmental extremes of the job, such as the ability of the person to work in areas of excessive cold or heat. An operator must be able to climb onto and off of a truck, to sit in the vehicle for extended periods of time and to turn his/her body to look in the direction of travel when driving in reverse.

Once the Program Administrator determines that a potential operator is capable of performing powered industrial truck duties, a contract training service provider will conduct initial training and operation evaluation. These instructors have the necessary knowledge, training and experience to train new powered industrial truck operators.
Initial Training

During an operator’s initial training, the instructors combine both classroom instruction and practical training.

All powered industrial truck operators are trained and tested on the equipment they will be driving before they begin their job. Each type of powered industrial truck has a different “feel” to it and that makes operating the industrial truck slightly different from operating other industrial trucks. The work areas where these trucks are being used also present particular hazards. For this reason, it is impractical to develop a single “generic” training program that fits all of our powered industrial trucks. Accordingly, during training, Linear Controls, Inc. covers the operational hazards of our powered industrial trucks, including:

- General hazards that apply to the operation of all or most powered industrial trucks.
- Hazards associated with the particular make and model of the truck.
- Hazards of the workplace in general.
- Hazards of the particular workplace where the vehicle is operated.

If each potential operator has received training in any of the elements of our training program and is evaluated to be competent, they need not be retrained in those elements before initial assignment in our workplace.

Training Certification

After an employee has completed the training program, the instructor will determine whether the potential driver can safely perform the job. At this point, the trainee will take a performance test or practical exercise through which the instructor(s) will decide if the training has been adequate.

The Safety Coordinator is responsible for keeping records certifying that each employee who has successfully completed operator training and testing. Each certificate includes the name of the driver, the date(s) of the training and the name of person who administered the training and evaluation.

Performance Evaluation

Each certified powered industrial truck operator is evaluated at least once every three (3) years to verify that the operator has retained and used the knowledge and skills needed to operate safely. This evaluation is performed by the Safety Coordinator. If the evaluation shows that the operator is lacking the appropriate skills and knowledge, the operator is retrained by a contract training service.

Refresher Training

Refresher training is administered to an operator if any of the following situations occur:
- If the operator is involved in an accident or a near-miss incident.
- If the operator has been observed driving the vehicle in an unsafe manner.
- When the operator is assigned to a different type of truck.
- If during an evaluation the operator needs additional training.
Current Certified Truck Operators

Under no circumstances shall an employee operate a powered industrial truck until he/she has successfully completed Linear Controls powered industrial truck training program. Regardless of previous experience, all new operators must at least undergo a performance evaluation. The Safety Coordinator maintains a list of employees who are currently authorized operators of our powered industrial trucks at this company.

Inspections

Periodic inspections are in conjunction with the particular powered industrial truck’s maintenance or service schedule. Maintenance schedules are normally expressed in days and operating or running hours. Most manufactures’ operator instruction manuals contain the recommended maintenance schedule. Inspections and maintenance or repair beyond the recommended service schedule are done by authorized workshops and/or service technicians.

General Operating Procedures

Powered industrial trucks can create certain hazards that only safe operation can prevent. That is why we have created sets of operating procedures. Our operating procedures are as follows:

Driving

Driving a powered industrial truck is fundamentally different than driving a car or other trucks. In fact, powered industrial trucks:
- Are usually steered by the rear wheels.
- Steer more easily loaded than empty.
- Are driven in reverse as often as forward.
- Are often steered with one hand.
- Have a center of gravity toward the rear, shifting to the front as forks are raised.

Unlike cars, some powered industrial trucks have a greater chance of tipping over when suddenly turned. Because of the design of powered industrial trucks, they have a very short rear wheel swing. This means that at high speeds, sudden turns can tip the truck and could result in serious injury and damage. Speed can cause the center of gravity to shift dramatically. Similarly, speeding over rough surfaces can cause tipping. Although structurally different than cars, powered industrial trucks, like cars, can collide with property and people.

Load Lifting and Carrying

Powered industrial trucks can lift only so much. Each truck has its own load capacity, which is indicated on the rating plate. Powered industrial trucks also have three-point suspension that forms an imaginary triangle from the left front wheel to the right front wheel to the point between the two back wheels. The center of gravity for a powered industrial truck must lie somewhere within this triangle or else the truck will tip over. The load and its position on the forks, as well as traveling speed and slopes, all affect the center of gravity. Loads themselves have gravity with which to contend. Loads need special care so that they do not fall.
Fuel Handling and Storage

Some of our powered industrial trucks operate with highly flammable and combustible fuels.

The storage and handling of liquid fuels, including gasoline and diesel fuel are done in accordance with NFPA Flammable and Combustible Liquids Code (NFPA 30-1969).

The storage and handling of liquefied petroleum gas fuel are done in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA 58-1969).

All employees who handle or use flammable liquids are instructed in their safe handling and use and made aware of the specific OSHA requirements for what they are doing with the liquids.

Carbon Monoxide Awareness

Powered industrial trucks with internal combustion engines produce carbon monoxide, an odorless, colorless and deadly gas produced by the incomplete burning of any material that contains carbon. These materials include gasoline, natural gas, propane, coal and wood. The most common source of CO is the internal combustion engine. Trucks, cars, forklifts, floor polishers, pressure washers or any other machine powered by fossil fuels generates CO. If inhaled, CO restricts the ability of blood system to carry oxygen to the body tissues that need it. Overexposure combined with less oxygen results in carbon monoxide poisoning. Mild poisoning can result in headaches, tightness in the chest, dizziness, drowsiness, inattention, fatigue, flushed face and/or nausea. If you continue exposure, lack of coordination, confusion, weakness or loss of consciousness may result. A heart condition, smoking, taking drugs or alcohol and pregnancy can aggravate CO poisoning. Physical activity can also make a situation worse because your body needs more oxygen to exert itself. Severe poisoning can kill you within minutes, sometimes without warning symptoms. The more CO there is in the air and the longer the exposure, the greater the danger.

Personal Protective Equipment (PPE)

Linear Controls, Inc. requires employees who operate powered industrial trucks wear the following PPE and equipment:

- Safety Shoes
- Hard Hat (When Appropriate)
- Safety Glasses (When Appropriate)

All operators required to wear this equipment are trained on:

- When PPE is necessary
- What PPE is necessary
- How to properly don, adjust and wear PPE
- Limitations of the PPE
- Proper care, maintenance, useful life and disposal of PPE

See the written Personal Protective Equipment Program for more details.
Proper Dress for Handling Materials

- Wear gloves and goggles when handling dangerous materials.
- Wear goggles when handling sand or loose materials.

Pedestrians

Due to the fact that powered industrial trucks are typically used near pedestrians, Linear Controls, Inc. requires both pedestrians and powered industrial truck operators to watch out for each other.

Maintenance

Investing time and effort into the proper maintenance of our equipment is a day-to-day responsibility. Keeping up with the manufacture’s recommended maintenance and lubrication schedules, and completing the proper records, will also increase our truck’s longevity and enhance its reliability.

Forklift truck operators shall follow the manufacture’s operator instruction manual for daily, weekly and monthly maintenance.

Periodic maintenance; those completed monthly, every six (6) months, or annually is done by a factory-trained expert or dealer.

Specific Operating Procedures

Before Starting Up:
1) Check brakes, steering wheel, horn, lift mechanism, controls, guards, tires, lights (including strobe light) and backup alarm.
2) On gasoline/diesel trucks, make sure there is adequate gasoline and oil.
3) Check water level, battery and inspect hoses.
4) Check fuel (% on LPG cylinders if LPG powered trucks).
5) Report any defects/malfunctions immediately to supervisor.

Use of Truck:
1) Never operate a defective truck. If trouble develops on the job, stop and notify supervisor.
2) Never operate a lift truck unless qualified and/or authorized to do so.
3) Never permit anyone to ride on any part of the truck.
4) Never overload the truck. To do so may damage the hoisting mechanism or result in an accident.
5) Never use the truck as a “battering ram.”
6) Never tow rail freight cars with our truck. They may get away and drag the truck.
7) Pushing a lift truck with another to get it started is prohibited.
8) Never “jump-start” a stalled truck from another truck.
9) Never use a gasoline-powered truck in a small building without proper ventilation. Carbon Monoxide poisoning may result.
10) Horseplay on or around a lift truck is not permitted.
11) When it is necessary to use the forklift for towing, use only the hook provided for this purpose. Select a tow chain/strap of the appropriate strength to meet the load demand.
Parking
1) Never step out of the truck until it has come to a stop.
2) Never leave the truck unattended with the motor on. If you leave the truck, you must:
   a. Lower the load.
   b. Turn off the engine.
   c. Remove the ignition key.
   d. Set the hand brake.
3) Park truck so it will not interfere with passage of other vehicles or persons.
4) Never park on, or within eight (8) feet of the center of any railroad tracks.
5) If necessary to park on an incline, set the brakes and chock the drive wheels.
6) Park indoors with the forks under a flat pallet or bench to prevent tipping. When outdoors, put your forks on the ground.

Driving
1) Never drive with wet or greasy hands.
2) Obey all traffic regulations.
3) Watch for persons who may dart out in front of you and for other approaching vehicles. (Pedestrians have right of way.)
4) Always drive at a safe speed. Slow down when making turns.
5) Drive slowly over rough roads. Watch for uneven spots. This is particularly important when making turns and if the truck is “top” heavy.
6) Approach blind corners slowly, keep to the right and sound horn.
7) Avoid driving over objects lying on floors and roadways. Driving over scrap lumber, piping or other materials will cause damage to the truck and may shift or topple the load.
8) Always give warning when approaching anyone from the rear. Be sure they see you.
9) Your horn is to be used only as a warning to others and not to demand the right-of-way.
10) Keep your feet and hands inside the truck except when signaling.
11) Give proper hand signals for turning, slowing or stopping.
12) When driving without a load, keep forks at least six (6) inches above the floor or ground.
13) Stop, look and sound horn when leaving or entering a building.
14) Approach floor openings, elevator wells and loading platforms slowly.
15) Before entering an elevator, be sure that its capacity is sufficient for the lift truck and load.
16) Keep away from unprotected edges of platforms and ramps.
17) Test brakes before driving down ramps or slopes. Never allow pedestrians to walk ahead of you down ramps or slopes.
18) Keep sufficient clearance between the lift truck and other objects or materials. Never cut corners around stacks of materials or stationary objects, such as machines or columns. When entering doorways, freight cars or elevators, make sure there is sufficient clearance on both sides, as well as overhead.
19) Avoid turning around in crowded aisles.
20) When following another truck, keep a safe distance behind. Minimum: fifteen (15) feet indoors, thirty (30) feet outdoors.
21) Do not travel abreast of another truck. Do not race another truck.
22) Where possible, face in the direction of travel.
23) In necessary, back down ramps or inclines to avoid spilling the load.
24) Drive up ramps when carrying a load.

**Stops and Starts**
1) Avoid sudden stops and starts. This may cause skidding or toppling of the load and may cause the truck to operate improperly.
2) Travel slowly on slippery surfaces.
3) Never use reverse as a brake. Stop vehicle with brakes before changing direction of travel.
4) Always look to see that the path is clear before starting ahead or backwards.

**Gaseous Areas**
1) Never operate the truck in gaseous areas.
2) Keep alert for spills or other similar conditions.

**Carrying a Load**
1) Never load the truck beyond its rated capacity.
2) Always carry loads at least six (6) inches above the floor or ground. This will reduce the possibility of losing the load and/or turning the truck on its side.
3) Never carry a load so high to see below it. If necessary, operate the truck in reverse.
4) Avoid carrying loose materials on the forks. Use pallets.
5) Secure material on pallet at all times. Chock round objects like pipe and drums.
6) Place a red flag on material that projects on either side more than four (4) feet.
7) Carry the weight close to the forks.
8) Never allow anyone to stand under elevated loads.

**Use of Lifting Device**
1) Before lifting, be sure that loads are stable and properly balanced.
2) Pick up the load under the center of its weight to avoid tipping the truck over or shifting the load.
3) Tilt the load against the backrest before moving the truck.
4) Be sure to return the mast to vertical before lowering or picking up the load.
5) Run the forks as far as possible under the load to be lifted. Never pick up the load until the forks are properly placed beneath the pallet.
6) Lower the load slowly. A sudden stop will cause the truck to tilt forward and may tip the truck or throw the operator out of the driver’s seat.

**Loading and Unloading Trucks**
1) Before entering trailers or rail cars, make sure their brakes are set and chocks are in place.
2) Before entering trailers or rail cars, make sure the dock plates are secure.
3) Never use dock boards or loading plates that are damaged.
4) Before driving into a van, walk in and inspect the floor.
5) Open all doors before operating gas/diesel lift truck inside box cars or trailers.
6) Enter and leave freight cars or trailers slowly.

**Stacking and Removing Material**
1) Never overload floors when stacking material.
2) Be sure there is sufficient headroom when raising loads. Watch for beams, pipelines, lights and other obstructions.
3) Be sure stacked materials are not too heavy. Poorly piled materials are dangerous.
4) When placing or picking up pallets, be sure not to unbalance loads.
5) Warn other employees to stand clear when stacking or removing materials.
6) Avoid stacking materials in/on roadways, aisles, sprinkler heads, fences and the like.
7) Observe clearance rules. Allow sufficient room for passageways.
8) Never obstruct fire-fighting equipment.
9) Never attempt to reach through uprights. This may result in serious injury.

**Conditions of Surfaces and Pallets**
1) Maintain floors, ramps, road surfaces and the like in good condition and free of debris at all times. Report any bad spots immediately to supervisor.
2) Report slippery conditions around the warehouse, ramps and platforms promptly.
3) Never use defective pallets.

**Refueling Gas and/or Diesel Trucks**
1) Never refuel a lift truck inside a building unless it is well ventilated.
2) Keep nozzle in contact with the tank opening while filling. This will prevent static sparks.
3) Never refuel with the engine running. Shut off the engine and set brakes before refueling.
4) Avoid overfilling the fuel tank. Wipe up any spillage before starting the engine.
5) Store and carry fuel in safety cans when a pump is not used.
6) Smoking is prohibited during refueling.

**Refueling L.P.G. Powered Forklift Trucks**
1) Shut off engine and set brake.
2) Block valve on tank.
3) With gloves on, crack hose fitting to the tank to bleed off the pressure on the line.
4) Finish removing hose from the tank.
5) Unclasp the tank from the truck and place in rack with valve end toward the back. (Optional)
6) Check that block valve is closed. The check valve can hold pressure in the tank and when installing the hose, can release it.
7) Check the tank fitting and that the “O” ring is in place.
8) Verify that the safety valve is not leaking.
16. HAZARD COMMUNICATION

Introduction

This policy establishes Linear Controls, Inc. written program to comply with the Hazard Communication Standard (29 CFR 1910.1200 and 29 CFR 1926.59) and has been revised to align with the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Revision 3.

This policy applies to all Linear Controls, Inc. locations and off-site operations. Any questions concerning this policy shall be directed to the Safety Coordinator.

This document must be made available for review by any interested employee, authorized client representative, chemical suppliers and/or OSHA Compliance Officer.

Since Linear Controls, Inc. does not manufacture chemicals, the company will rely on suppliers to conduct hazard determinations and provide Safety Data Sheets (SDS). All employees shall be trained to understand and recognize suppliers Hazard Material System prior to introduction to any company work place. The systems are outlined in the program.

Purpose

In 1983 OSHA issued regulation 29 CFR 1910.1200 that requires all employers to inform their employees about hazardous substances that they will encounter in their workplace.

To accomplish this requirement Linear Controls, Inc. has developed, implemented and will maintain a written Hazard Communication Program.

The purpose of this procedure is to:
1) Provide guidance to company personnel on the safe use, handling and storage of hazardous chemicals.
2) Describe labels and other forms of warning.
3) Supply and explain Safety Data Sheets.
4) Provide and train employees on all information regarding Hazard Communication.
5) Explain proper handling and use of hazardous chemicals.

Following the guidelines and protective measures in this procedure will reduce the potential for incidents involving chemical handling.

Scope

This procedure applies to all company personnel who handle hazardous chemicals or come into contact with hazardous chemicals in the workplace.

Responsibilities

Management responsibilities include:
1) Providing technical assistance.
3) Develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in this section for labels and other forms of warning, safety data sheets, and employee information will be met.
   a. A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas).

The Safety Coordinator is responsible for administering the Company Hazard Communication Program and has full authority for the implementation and execution of this program.

Additional responsibilities include:
   1) Informing employees about the location and accessibility of SDS’s.
   2) Monitoring the program implementation during site inspections.
   3) Assisting employees as needed in the evaluation of chemicals encountered in the workplace and determining precautions and protective equipment.
   4) Copies of this program can be obtained from the Corporate Office.

Company personnel are responsible for obtaining the initial training on hazard communication.

Additional responsibilities include:
   1) Evaluating the chemicals that they encounter in the workplace and utilizing appropriate protective equipment and other precautions.
   2) Ensuring that all chemical containers brought on to customer premises are properly labeled.
   3) Requesting an SDS for any chemical that they purchase in the field.

Safety Data Sheet (SDS)

The SDS’s we use are fact sheets for chemicals that pose a physical or health hazard in the workplace. SDS’s provide our employees with specific information on the chemicals they use.
   - SDS’s must be made available, upon request, to employees, their representatives, the Assistant Secretary and the Director in accordance with requirements of 29 CFR 1910.1200(e).

The Safety Coordinator is responsible for obtaining/maintaining the SDS’s at any facility and at field work sites. He/she will contact the chemical manufacturer or vendor if additional research is necessary. The SDS’s are kept at the following location:
   - Corporate Office

The procedure followed if the SDS is not received at the time of first shipment is to contact the manufacturer and request a fax copy of the SDS sheet.

Linear Controls, Inc. personnel shall request copies of all SDS or chemical analysis for substances in the client facility prior to performing any work with those substances.

Employees must refer to a SDS:
• Before handling material for the first time.
• If not aware of the recommended PPE to utilize when handling a particular material.
• To clean up a spill or leak and dispose of the material.
• When there is an unusual circumstance involving possible exposure to the material, such as maintenance, turnaround or confined space entry.
• To know the recommended first-aid measures to follow if contact with the material should occur.
• To answer questions about the health hazards the material may present.
• To answer questions about the material’s combustibility, flammability, exposure limits or reactivity.
• To answer questions about how to properly store the material.
• To answer questions about the material’s physical characteristics.

The SDS is a valuable reference tool. It should be referred to when employees are unsure about any of the precautions and protective measures to take when handling or using a product/material.

Procedure

It is the responsibility of the chemical manufacturer and/or importer to develop and provide Safety Data Sheets for all chemicals that they produce, blend, import, and/or sell.

Management shall have a Safety Data Sheet for each chemical used with the exception to consumer products.

The company is subject to work at numerous clients’ locations and each operation could require the use of many different chemicals. For this reason each work site should maintain a list of chemicals known to be present using an identity that is referenced on the appropriate Safety Data Sheet.

Non-Routine Tasks:

When and if company personnel are required to perform hazardous non-routine tasks such as confined entry, handling of hazardous materials, working near or in process areas with unmarked vessels or piping or the repair of any equipment containing hazardous materials:

1) The person in charge will conduct a safety meeting and review the project to be undertaken.

2) The person in charge will conduct a special training session to inform the employees of any possible exposure to any hazardous chemicals they may use or any chemical that might be in unlabeled piping.

3) The training will include but not be limited to:
   a. Methods and observations which may be used to detect the presence or release of hazardous chemicals by utilizing the following equipment:
      i. Calorimetric tubes
      ii. Portable electronic detectors
      iii. Fixed detection systems
b. Any physical and health hazards of the chemicals that might be encountered, such as:
   i. Dizziness
   ii. Weakness
   iii. Nausea
   iv. Explosives
   v. Fire

At customer sites, company personnel must determine the hazardous material protective measures specific to the work site.
- This can be accomplished during site entrance briefings.
- Company personnel should question the client about hazardous materials on site and the potential for exposure.

**Multi-Employer Workplaces:**

Clients who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication programs developed and implemented include the following:

1) The methods the employer will use to provide the other employer(s) on-site access to material safety data sheets for each hazardous chemical the other employer(s)’ employees may be exposed to while working
2) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace’s normal operating conditions and in foreseeable emergencies
3) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.
   a. The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this section.
   b. The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.1200 (e).

Appropriate hazard warnings, or alternatively, words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

**Hazardous Chemical Groups**

There are many different hazardous chemicals. Hazardous chemicals fall into two types:

1) Physical Hazards
2) Health Hazards
Physical Hazards

Physical hazards are represented by three properties identified as flammability, corrosiveness and reactivity. A physical hazard is a condition that can damage property or the human body by fire, chemical processes or explosion.

Physical hazards, such as flammability and reactivity, must be carefully evaluated and controlled.

Flammability

The flammable characteristic and the ability to ignite and burn pose a fire hazard.

Flash Point

The minimum temperature at which there is enough vapor to form an ignitable mixture with the air near the surface.

A flammable liquid has a flash point below 100ºF. Additionally, the liquid is considered extremely flammable if the flash point is below 20ºF.
Example: Gasoline

A combustible liquid has a flash point above 0ºF but below 200ºF.
Example: Mineral Spirits

A non-flammable liquid has flash point above 200ºF but may still burn above that temperature.
Example: Motor Oil

The auto-ignition temperature is the temperature at which a material will burn without a spark.

Corrosive

Corrosives represent a large hazard category of many chemical products. A corrosive property refers to the ability of a substance to destroy body tissues, metals, plastics and other material by chemical processes. They are capable of causing severe irritation and burns when they come into contact with the skin. Corrosives are either strong bases, having a pH above 7, or strong acids, having a pH in the lower range. Corrosives are considered dangerous when the pH is either 12 or below 3.

Reactivity

Reactive(s) are chemicals that react violently under certain conditions. Often they release dangerous gases or vapors or may become flammable or explosive. The hazards associated with these chemicals depend on the speed of the chemical reaction, how much of the reactants are available and exposed to each other and on the presence of an activator.
The Safety Data Sheets provides critical information about flammable limits, flash point and incompatible chemicals, which can cause a hazardous reaction.

Physical hazard information can impact how you handle, store and dispose of a chemical.

**Health Hazards**

A substance is a health hazard because of its ability to cause harmful health effects. It can strike a single cell, a group of cells, an organ system, or the entire body. An immediate health effect may be visible damage to the body or a decrease in performance or function measurable only by a physical examination. To assess the hazards of a material and determine appropriate precautions, company personnel must review the chemical SDS.

Company personnel must be familiar with the hazardous properties of the chemicals that are likely to be encountered on the job.

**Health Effects**

**Acute Effects**

This type of exposure occurs very rapidly after the exposure and symptoms are readily noticeable. Examples of this type of exposure would be eye irritation or some type of dermatitis resulting from direct contact with a hazardous material.

**Chronic Effects**

A chronic exposure develops slowly over time, usually after repeated exposures. An example would be the development of cancer as a result of exposure to low levels of radiation.

**Local Effects**

A local effect occurs at the point of contact. An example of this would be the irritation caused by a caustic soda spill on your skin that burns upon contact.

**Remote Effects**

Remote effects occur at a place on the body other than the point of contact or exposure. An example would be cancers caused from inhalation of benzene vapors.

**Methods of Control**

The methods of control are:

1) Administrative
2) Personal protective equipment
3) Engineering
Administrative controls will limit a worker's exposure to a substance through job rotation or by work practices to prevent the worker from continuous exposure.

Personal protective equipment is covered in the Respiratory Protection Plan and Personal Protective Equipment Plan.

Process change is the most practical and least expensive engineering control so it will be utilized whenever possible.

Plan Location

Linear Controls, Inc. Hazard Communication Plan can be found in the following location:
- Safety Coordinator's Office

Definitions

**Boiling Point** is the temperature at which a liquid changes to a vapor state at a given pressure, usually expressed in degrees
- Fahrenheit at sea level pressure (760mm Hg, or one atmosphere).
- For mixtures, the initial boiling point or the boiling range may be given.
- Flammable materials with low boiling points generally present special fire hazards

**Carbon Dioxide (CO2)** is a heavy, colorless gas, which is produced by the combustion and decomposition of organic substances and as a by-product of many chemical processes.

**Carbon Monoxide (CO)** is a colorless, odorless, flammable, and very toxic gas produced by the incomplete combustion of carbon.
- Carbon monoxide can cause asphyxiation even in environments with adequate oxygen.
- Carbon monoxide is also a by-product of combustion and many chemical processes.

**Combustible** is the term used by regulatory agencies to classify certain liquids that will burn, on the basis of flash points.
- Combustible liquids are generally defined as having a flash point between 100°F (37.8°C) and 200°F (93.3°C).
- Non-liquid substances such as wood and paper are classified as ordinary combustibles. See flammable.

**Explosive** means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

**Flammable** means a chemical that includes one of the following categories:
- Aerosol, flammable means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve
opening, or a flashback (a flame extending back to the valve) at any degree of valve opening.

- Gas, flammable means a gas which at ambient temperature and pressure forms a flammable mixture with air at a concentration of 13% by volume or less.
- Liquid, flammable is any liquid having a flash point below 100ºF (37.8ºC), except any mixture having components with flash points of 100ºF (37.8ºC) or higher, the total of which make up 99% or more of the total volume of mixture.
- Solid, flammable means a solid, other than a blasting agent or explosive that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

**Flammable Limits** is two values, the lower and upper flammable limits.

- LEL or LFL - Lower explosive limit, or lower flammable limit, of a vapor or gas.
  - The lowest concentration (lowest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, arc or flame) is present.
  - At concentrations lower than the LEL, the mixture is too lean to burn. Also see UEL.
- UEL or UFL means the upper explosive limit or upper flammable limit of a vapor or gas.
  - The highest concentration (highest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, arc, or flame) is present.
  - At higher concentrations, the mixture is too rich to burn.

**Flash Point** is the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite.

**Reactive** means a chemical reaction with the release of energy. Undesirable effects, such as pressure buildup, temperature increase, and formation of noxious, toxic or corrosive by-products may occur because of the reactivity of a substance to heating, burning, direct contact with other materials, or other conditions in use or in storage.

**Toxic** is the ability of a chemical to do harm to a body organ, tissue or system.

**Vapor Density** is the weight of a vapor or gas compared to the weight of an equal volume of air.

- Materials lighter than air have vapor densities less than 1.0 (examples: acetylene, methane, hydrogen).
- Materials heavier than air (examples: propane, hydrogen sulfide, ethane, butane, chlorine, sulfur dioxide) have vapor densities greater than 1.0. All vapors and gases will mix with air, but the lighter materials will tend to rise and dissipate (unless confined).
- Heavier vapors and gases are likely to concentrate in low places along or under floors, in sumps, sewers, and manholes, in trenches and ditches where they may create fire or health hazards.
**Vapor Pressure** is the pressure exerted by a saturated vapor above its own liquid in a closed container.

**Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**

The Globally Harmonized System is a United Nations system for standardizing and harmonizing the classification and labeling of chemicals. It includes labeling, Safety Data Sheets and easily understandable symbols, based on the classification criteria developed for the GHS which are the main tools for chemical hazard communication.

**Labeling**

The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving his facility is labeled, tagged or marked with the following information:

1. Product Identifier.
2. Pictogram.
3. Single word.
5. Precautionary Statement.
6. Supplier information.

Personnel shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

The person in charge shall ensure that all containers are properly labeled and that the employees understand appropriate hazard warnings.

This may be done by using:

1. Signs.
2. Placards.
4. Batch tickets.
5. Operating procedures.
6. Other such written materials.

Management shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. If Non-English speaking personnel are involved, the information shall be presented in their language also.

Labeling is not required when an employee transfers a hazardous chemical or mixture from a labeled container to a portable or smaller container if that employee will immediately use the contents of the smaller container.

All containers must be labeled unless the entire contents will be used within the work shift.

All chemicals being transported will have a SDS sheet accompanying it.
Labels

GHS labels must contain the following information: Product identifier, Signal word, Hazard statement(s), Pictogram(s), Precautionary statement(s), and Supplier information (see figure 1).

Figure 1.

![New style Label (GHS)](image)

Symbols/Pictograms

There are 9 different GHS pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents distinct hazards. The pictogram on the label is determined by the chemical hazard classification (see figure 2).
The signal word indicates the relative degree of severity a hazard. The signal words used in the GHS are

"Danger" for the more severe hazards, and "Warning" for the less severe hazards.
Signal words are standardized and assigned to the hazard categories within endpoints. Some lower level hazard categories do not use signal words. Only one signal word corresponding to the class of the most severe hazard should be used on a label.

Hazard Statements

Hazard statements are standardized and assigned phrases that describe the hazard(s) as determined by hazard classification.

Precautionary Statements

Precautionary information supplements the hazard information by briefly providing measures to be taken to minimize or prevent adverse effects from physical, health or environmental hazards. First aid is included in precautionary information.

Department of Transportation (DOT) Hazard Identification System

The DOT Hazard Identification System requires labels on small containers and placards on tanks and trailers intended for transport. These placards and labels indicate the nature of the hazard presented by the cargo. The classification system used for placards and labels is based on the United Nations Hazard Classes. The UN Hazard Class Number is found in the bottom corner of the DOT placard or label.

Modification of DOT Hazard Identification System

To facilitate the handling of a hazardous material incident, some placards are being altered to accept a 4-digit identification number. This number comes from the Hazardous Material Table in the DOT Regulations, 49 CFR 172.101. This ID number also must be written on the shipping papers or manifest. In the event of an incident, the ID number on the placard will be much easier to obtain than the shipping papers. Once the number is obtained, the DOT’s “Emergency Response Guidebook” can be consulted. This book describes the proper methods and precautions for responding to a release of each hazardous material with an ID number. The DOT system goes one step further in aiding response personnel than the NFPA system. However, using either system will help to properly identify and characterize the materials involved.

United Nations (UN) Identification System

1  Explosives
2  Flammable and Non-Flammable Gases
3  Flammable and Combustible Liquids
4  Flammable Solids
5  Oxidizers and Organic Peroxides
6  Poisons
7  Radioactive Materials
8  Corrosive Materials
9  Miscellaneous Hazardous Materials
Training Requirements

Upon their initial assignment Management will provide new employees effective information and training on hazardous chemicals in their work place.

Training will be conducted by the Safety Coordinator or his designee.
  - This may be contracted to a professional safety training organization.

Company personnel will be trained on the following topics:
  1) Requirements of this program and the Hazard Communication Standard.
  2) Any operations in the work area where hazardous chemicals are present.
  3) Location of the written Company Hazard Communication program.
  4) A listing of hazardous chemicals present.
  5) Training on all aspects of SDS sheets.
  6) Physical and health hazards of chemicals in work area.
  7) Protection measures to be utilized to prevent exposure, appropriate work practices, emergency procedures, and personal protective equipment to be used.
  8) Details of the Hazard Communication program.
  9) Explanation of the labeling system and Safety Data Sheets.
     a. How employees can obtain these items.
  10) The contents of this procedure.
17. ELECTRICAL SAFETY

Introduction

This section provides practical guidelines for safeguarding personnel and property from hazards arising from the use of electricity.

All applicable codes and regulations must be followed when installing, maintaining or repairing electrical equipment. Industry recommended practices should also be considered.

Procedures

The following guidelines should be followed when working in/around electrical equipment:

1) All electrical hazards shall be immediately safeguarded and reported to a supervisor. Safeguarding may include such actions as de-energizing, lockout, tag out and/or placement of barricades.

2) Employees shall utilize safe work practices to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.
   a. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.

   NOTE: The assistance of a qualified person may be required to appropriately safeguard the hazard.

3) Electrical equipment should be operated and maintained according to manufacturer’s instructions.

4) Before touching any electrical equipment, personnel shall visually inspect the grounding.
   a. Visually inspect the equipment for damage.
   b. Check for burnt odors.
   c. Listen for unusual noise.
   d. Brush equipment with the back of the hand.

   NOTE: Never use the inside of hand. Electrical shock makes muscles contract and could cause your hand to grasp the equipment.

5) Determine if lockout/tag out (energy isolation) procedures are necessary.

6) Before working on equipment that is controlled by the Computer Automated Production System (CAPS) or other remote automation systems, the equipment must be isolated from the control system.

7) Electrical circuits should be de-energized before repairs are made.
   a. Conductors and parts of electric equipment that have been de-energized but have not been locked or tagged shall be treated as energized parts.

8) Personnel must not stand directly in front of an electric panel when operating the disconnecting means or operator switch (Hand-Off-Auto, Stop/Start, etc.).

9) All jewelry that might come in contact with circuits must be removed.
10) Hands, shoes and clothing should be dry before handling any energized electrical equipment.
11) Avoid contact with electrical power lines, including downed power lines. Even low voltage lines present a potential for shock or electrocution.
12) Special precautions are required when working with high voltage (greater than 600 volts). This requires the use of PPE, tools, test instruments and procedures specially designed for this purpose.
13) All electric motors, lighting fixtures and other electric equipment in hazardous (classified) areas must meet requirements for class, division and group.
14) All disconnecting means for equipment should be labeled to indicate their purpose and the equipment served (unless the disconnecting means are located and arranged so that their purpose is clearly evident).
15) Labels should be suitable for the environment.
16) Equipment that starts automatically shall have a sign warning of the danger involved, such as “Danger – Automatic Start Equipment.”
17) Equipment that is controlled by the Computer Automated Production System (CAPS) or other remote automation systems should have a sign warning of the danger involved, such as “Danger – Automatic Start Equipment.”
18) The area around electric panels shall be designed so that personnel are not required to stand in water while operating switches.
19) Safeguard any temporary power leads to operating equipment to protect personnel and to provide physical protection from abrasion, crushing, chemical/fluid attack, rough handling, etc. Remove the temporary leads after the job is complete or replace them with a permanent installation as soon as practical.
20) The disconnection means of a motor controller must not be used to start or stop a motor (except in an emergency).
21) The operator switch (Hands-Off-Auto, Start/Stop) must be in the “Off” position before resetting overloads or opening, or closing the disconnecting means.
22) Electrical outlets should not be overloaded. Outlets should include an equipment-grounding conductor.
23) Unless floor mats are specifically designed, inspected and maintained as insulating mats, they do not provide protection from electrical shock.

Working on or near exposed energized parts:

1) Only qualified personnel may work on electric circuit parts or equipment that has not been de-energized.
   a. Qualified personnel shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, PPE, insulating and shielding materials, and insulated tools.

Test Instruments

All test instruments, including hand-held voltmeters, must be rated for:
1) The equipment or circuits they will be connected to.
2) The environment in which they will be used.

All test instruments must be visually inspected before use.

Defective or damaged test instruments must be removed from service.
Surroundings

All work conducted in a confined space shall follow all confined space regulatory requirements. Personnel must evaluate the need for a confined space entry permit before they enter generator cable vaults, conduit vaults or other similar areas.

All energized electrical circuits shall be locked/tagged out of service and checked prior to work.

Protective shields or barriers shall be provided as needed.

All non-current-carrying metal parts of enclosures, structures and electrical equipment that could become energized must be effectively bonded and grounded.

Qualified personnel must maintain grounding. Ground wires must not be altered except by a qualified person performing repair or troubleshooting.

Overhead Lines

General

If work is to be performed near overhead lines, the lines shall be de-energized and grounded, or other protective measures shall be provided before work is started. If the lines are to be de-energized, arrangements shall be made with person or organization that operates or controls the electric circuits involved to de-energize and ground them.

If protective measures, such guarding, isolating, or insulating, are provided, these precautions shall prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

1) Where practical, bucket trucks should be considered for working on overhead power lines, overhead transformers, poles, etc.
2) Unused overhead power lines should be either disconnected and maintained in a safe manner, or removed.

The following working clearances apply around energized overhead power lines.

Clearances for Qualified Workers

1) Only qualified persons are allowed to work within a ten (10) foot radius of energized overhead circuits.
2) When qualified persons are within the ten (10) foot radius, they must have the appropriate PPE, and either:
   a. Maintain the approach distance specified by the manufacturer of the PPE and use approved live-line tools.
   b. Insulate the energized parts using approved insulating guards.
3) If the situation involves the use of conductive tools which could potentially swing inside the ten (10) foot radius, then overhead circuits must be de-energized and grounded on each side of the work to be performed.
Clearance for Unqualified Workers

When an unqualified person is working in an elevated position near overhead lines, the location shall be such that the person and the longest conductive object he/she may contact cannot come closer to any unguarded, energized overhead line than the following distances:

1) For voltages to ground 50 kV or below, the distance is ten (10) feet.
2) For voltages to ground over 50 kV, the distance is ten (10) feet plus four (4) inches for every 10 kV over 50 kV.

When an unqualified person is working on the ground in the vicinity of overhead lines, the person may not bring any conductive object closer to unguarded, energized overhead lines than ten (10) feet.

1) To ensure this clearance is maintained, a constant watch familiar with the hazards involved must be present during any activities occurring within a fifteen (15) foot vertical plane of energized conductors.

   Exception: The only exceptions to this rule are cases where it is determined that there is no possibility that equipment, materials or tools could be raised, swung or otherwise reach within the ten (10) foot radius of the energized power line (i.e. moving a right of way).

2) If the ten (10) foot radial clearance cannot be maintained, the watch must stop the activities and/or have a qualified person de-energize the line.
3) If a situation requires that work be done within the ten (10) foot radius by unqualified persons, then the overhead circuits must be de-energized and grounded on each side of the work to be performed. (Examples include work by surveyors, painters, pulling units, etc.)

Vehicular and Mechanical Equipment

Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of ten (10) feet is maintained. If the voltage is higher than 50 kV, the clearance shall be increased four (4) inches for every ten (10) kV over that voltage.

If the vehicle is in transit with its structure lowered, the clearance may be reduced to four (4) feet. If the voltage is higher than 50 kV, the clearance shall be increased four (4) inches for every ten (10) kV over that voltage.

Illumination

Employees may not enter spaces containing exposed energized pars, unless illumination is provided that enables the employee to perform work safely.

Conductive Materials and Equipment

Conductive materials and equipment that are in contact with any part of an employee’s body shall be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts. If an employee must handle long dimensional
Conductive objects in areas with exposed live parts, insulation, guarding, and material handling techniques shall be utilized to minimize the hazard.

Conductive Apparel

Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) may not be worn if they might contact exposed energized parts. However, such articles may be worn if they are rendered non-conductive by covering, wrapping, or other insulating means.

Ladders

1) Portable metal ladders or ladders which have longitudinal metallic reinforcements shall not be used when working on, or within reach of exposed energized parts.
   a. Portable ladders shall have non-conductive side rails.
2) Portable wood ladders used in electrical work shall not be covered, except with a clear nonconductive coating.
3) Whenever ladders are to be climbed to work on energized electrical circuits, rubber gloves, if required, shall be put on by the worker before climbing and shall not be removed until returning to the ladder’s base.
4) Straight ladders shall be equipped with rubber feet, and shall be tied to a solid support at the top. A second person shall hold the bottom of the ladder steady while the worker climbs to tie the ladder off.
5) Any person performing work on energized equipment in elevated positions shall protect him/her from falling because of involuntary muscle reaction due to shock. A safety harness or line should be used.

Ground Fault Circuit Interrupters (GFCI)

Ground Fault Circuit Interrupters (GFCI) provides protection from fatal electrical shock.

Methods of GFCI protection are:
1) GFCI Breaker
2) GFCI Receptacle
3) GFCI Portable Cord set

The following must be GFCI protected:
1) All bathroom receptacles.
2) Counter top receptacles within six (6) feet of a sink.
3) All 125 VAC, 15/20 amp single-phase cord-and-plug-connected equipment used outside or in wet locations (i.e. lights, fans and other portable electric tools)

Electrical Apparatus Enclosures

1) For energized electrical apparatus in hazardous locations, a hot work permit must be obtained before the apparatus is opened.
2) Doors and covers of electrical apparatus must be kept closed according to manufactures specifications except while taking readings.
   a. Making Repairs
   b. Troubleshooting
3) The doors must be capable of being opened at least 90 degrees, and while work is in progress, the doors should be braced open.
4) The mating surfaces of explosion-proof enclosures and fittings must not be scored, painted or sealed in any way. However, manufacturer approved lubricants may be used on the surface.

Cleaning Electrical Apparatus

Control Panels
- Control panels and other electrical apparatus must be de-energized before external cleaning.

Electric Motors
- Electric motors and other electrical equipment should be cleaned with approved cleaners in accordance with manufacturer’s instructions.

Use of Water or Steam
- Water or steam should not be used to wash the area near electric motors or other electrical apparatus unless the equipment has been de-energized.

Internal Cleaning
- Manufacturer’s guidelines must be followed when performing internal cleaning. Control panels, electrical apparatus, electrical motors and other electrical equipment must be de-energized before cleaning.

Cleaner Precautions
- Workers should consult the Material Safety Data Sheet for any precautions related to the cleaner.

Portable Generators

Locations
1) Portable electrical generators should be installed in a non-hazardous area (i.e. an area other than Class 1, Division 1 or 2).
2) If installation of a portable generator is required for a hazardous area, workers must obtain a hot work permit.

Safety Interlocks and Devices
1) Safety devices should not be bypassed or jumped without supervisor approval.
2) The bypass must be temporary and must be removed when work is complete.
3) Safety interlocks could include hardware or software

Exception: Qualified persons may override an electrical/mechanical safety device to access an enclosure to perform troubleshooting.

Flexible Cord and Cables
1) Flexible cord and cables include:
   a. Extension Cords
   b. Extension Lights Flexible Cable
   c. Cords Used On Portable Equipment
2) The cord and cables should be:
   a. Listed and labeled (UL, FM, etc.).
   b. Inspected before use.
   c. Unplugged/de-energized before handling or rolling up.
   d. Properly sized for the application, including the ground wire.
   e. Routed to minimize cord damage or personnel walking on or tripping over them.
   f. Unplugged by pulling on the plug, not the cord.
   g. De-energized when not in use.
3) Flexible cord and cables should be:
   a. Stored when the job is completed.
   b. Destroyed and replaced if defective.
4) All fuses, whether new or replacement, should be of the proper type and rating.
5) A fuse must not be used to replace another type of fuse simply because it fits the fuse holder.
6) Make shift devices must not be used to replace fuses.
7) Renewable element fuses below 1000 amperes must not be used.
8) Fuse pullers must be clean, dry, and free from oil and grease to maintain their insulation.
9) Fuses of greater than fifty (50) volts must be changed by qualified and authorized personnel only.
10) The following precautions must be taken:
    a. Review the manufacturer’s recommendations and local procedures.
    b. Review the use of PPE and other required tools for the job and turn the operator switch (i.e. Hands-Off-Auto, Stop/Start) to “off”.
    c. Stand to the side of the panel when operating the disconnecting means.
    d. Properly de-energize the circuit and consider whether lockout/tag out (energy isolation) procedures should be followed.
    e. Close and latch the door before placing the disconnecting means in the “on” position.

**Equipment**

1) Personnel passing through inadequately lighted areas should use a flashlight.
2) Flashlights used in hazardous locations must be suitable for the area’s electrical classification.
3) Flashlights should not be used unless the outside lens or globe is in place.
4) Portable lamps should not be used unless the outside lens or globe is in place. They must have a guard in place and must be kept in good repair.
5) When servicing lighting equipment, such as replacing light bulbs or protective globes, workers should first de-energize the equipment.
   a. Use proper eye protection in case a bulb or globe breaks.
   b. Carefully handle any broken glass fragments.
   c. Properly dispose of glass fragments and lamps.

**Transformers**

1) Transformer banks that are greater than 600 volts, and that are on platforms less than eight (8) feet above grade, must be surrounded by a fence at least eight (8) feet high with a locked gate.
2) The fence must be effectively grounded and have warning signs posted that state “Danger, High Voltage. Keep Out.”
3) The use, connecting, disconnecting and charging of storage batteries should conform to Article 480 of the NEC and NFPA 30 Codes.

4) Ensure adequate ventilation prior to charging, connecting or disconnecting batteries.

5) Corroded storage batteries should be cleaned with a mild solution of baking soda and water.

6) Connections should be tightened and the terminal areas should be coated with an approved compound.

7) Before the work of construction or excavation begins:
   a. The underground cables and conduit must be located and marked.
   b. The circuits in the immediate vicinity should be de-energized.

   NOTE: Buried electrical circuits, especially those over 600 volts, are often encased in red concrete.

Training Requirements

Employees who face a risk of electric shock but are not qualified personnel shall be trained and familiar with electrically related safety practices.

Employees shall be trained in safety related work practices and clearance distances that pertain to their respective job assignments.

Definitions

**Authorized** indicates that permission has been granted by the local supervisor.

**Disconnecting means** is a device used to isolate the conductors of a circuit from their source of supply.
   1) Circuit Breakers
   2) Safety Switches
   3) The disconnect on a motor starter

**Grounded effectively** means permanently connected to earth through a ground connection that has sufficiently low impedance (less than 25 OHMS) and sufficient amperage to ensure that the ground fault current which may occur cannot build up to voltages dangerous to personnel.

**Bonding** is the joining of metallic parts to form an electrically conductive path that will ensure electrical continuity and the capacity to conduct safely any current likely to be imposed.

**Hazardous (Classified) locations** are Class 1, Division 1 or Class 1, Division 2.

The table below defines each class:
<table>
<thead>
<tr>
<th>Class Division</th>
<th>Definition</th>
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| Class 1, Division 1 | Class 1, Division 1 are locations in which:  
- Ignitable concentrations of flammable gases or vapors are expected to exist under normal operating conditions.  
- Faulty equipment might simultaneously release flammable gases or vapors and also cause failure of electrical equipment.  
- Reference: For more information, refer to API RP 500. |
| Class 1, Division 2 | Class 1, Division 2 are locations in which:  
- Flammable gases or vapors may be present, but normally are confined within closed systems.  
- Flammable gases or vapors are prevented from accumulating by adequate mechanical ventilation.  
- Situated adjacent to a Division 1 location.  
- Reference: For more information, refer to API RP 500. |

**Unclassified location** is a location that is not classified as Division 1 or 2. For more information, refer to API RP 500.

**Overload** describes the operation of:  
1) Equipment in excess of normal, full-load rating.  
2) A conductor in excess of rated capacity where the overload, if it persists for a sufficient length of time, would cause damage or dangerous overheating.

*NOTE: A fault, such as a short circuit or ground fault, is not an overload.*

**Qualified personnel**, as defined for this section, shall at a minimum, be personnel trained and able to demonstrate the following:  
1) Skills and techniques necessary to distinguish between exposed energized parts of electrical equipment and non-energized parts.  
2) Skills and techniques necessary to determine the nominal voltage of exposed energized parts.  
3) Knowledge of the safe approach distance and voltage when working near exposed energized parts.  
4) Proper use and maintenance of PPE.  
5) Proper use and maintenance of insulating and shielding materials, insulated tools and grounding devices.  
6) Lockout/tag out (energy isolation) procedures.  
7) Knowledge of the construction and operation of specific electrical equipment and the hazards involved.  
8) Proper use and maintenance of test instruments and knowledge of their rating limits.  
9) Appropriate alerting techniques, such as signs, tags, and barricades for warning and protecting other personnel and the public, from electrical hazards.  
10) Work on or near exposed energized parts of electrical equipment that operate at voltages of 50 volts or more to ground must be performed by qualified and authorized personnel. These personnel should be trained for the task to be performed.  
11) Qualified and authorized personnel must make repairs to electrical equipment.
NOTE: It is likely that individuals may be qualified with regard to certain electrical equipment, but unqualified as to other equipment.
18. NFPA 70E

Purpose

The purpose of this program is to set forth procedures for the safe use of electrical equipment, tools, and to comply with NFPA 70E requirements.

Scope

This program applies to all Linear Controls, Inc. employees and contractors. When work is performed on a non-owned or operated site, the owner/clients program shall take precedence, however, this document covers Linear Controls, Inc. employees and contractors and shall be used on owned premises, or when an operator’s program doesn’t exist or is less stringent.

Linear Controls, Inc. shall advise the host employer of:
- Any unique hazards presented by the contract employer’s work,
- Any unanticipated hazards found during work by Linear Controls, Inc. that the host employer did not mention, and
- The measures Linear Controls, Inc. took to correct any hazards reported by the host employer to prevent such hazards from recurring in the future.

Responsibilities

The Safety Coordinator will develop electrical safety programs and procedures in accordance with OSHA requirements and/or as indicated by events and circumstances.

The Operations Manager and Supervisors are responsible for ensuring that only qualified employees and or qualified contractors perform electrical repairs or installations.
- Unqualified persons shall not be permitted to enter spaces that are required to be accessible to qualified employees only, unless the electric conductors and equipment involved are in an electrically safe work condition.

The Operations Manager and Supervisors are also responsible for ensuring all applicable electrical safety programs are implemented and maintained at field locations.

Employees are responsible to use electrical equipment, tools, and appliances according to this program, for attending required training sessions when directed to do so and to report unsafe conditions to their supervisor immediately.

Only qualified employees may work on electric circuit parts or equipment that has not been de-energized. Such employees shall be made familiar with the use of special precautionary techniques, PPE, insulating and shielding materials and insulated tools.
Safe Work Practices

Prior to any work being done within the Limited Approach Boundary a hazard risk analysis shall be performed. The analysis shall contain event severity, frequency, probability and avoidance to determine the level of safe practices employed.

A job briefing should be held before starting each job and include all employees involved. The briefing should cover hazards associated with the job, work procedures involved, special precautions, energy source controls, and PPE requirements.
  - Can be part of JSA process.

Safe Work Practices for Working within the Limited Approach Boundary
  - The limited approach boundary is the distance from an exposed live part within which a shock hazard exists.
  - Only qualified persons shall complete tasks such as testing, troubleshooting and voltage measuring within the limited approach boundary.

The restricted approach boundary is the closest distance to exposed live parts a qualified person can approach with without proper PPE and tools. Inside this boundary, accidental movement can put a part of the body or conductive tools in contact with live parts or inside the prohibited approach boundary. To cross the restricted approach boundary, the qualified person must:
  1) Have an energized work permit that is approved by the supervisor or manager responsible for the safety plan.
  2) Use PPE suitable for working near exposed lived parts and rated for the voltage and energy level involved.
  3) Be certain that no part of the body enters the prohibited space.
  4) Minimize the risk from unintended movement, by keeping as much of the body as possible out of the restricted space; body parts in the restricted space should be protected.

The prohibited approach boundary is the minimum approach distance to exposed live parts to prevent flashover or arcing. Approaching any closer is comparable to making direct contact with a live part. To cross the prohibited approach boundary, the qualified person must:
  1) Have specified training to work on exposed live parts.
  2) Have a permit with proper written work procedures and justifying the need to work that close.
  3) Do a risk analysis.
  4) Have (2) and (3) approved by the appropriate supervisor.
  5) Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.

The Flash Protection Boundary is the approach limit at a distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur.
  - Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.
  - For systems of 600 volts and less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA and a clearing time of 6 cycles for
the circuit breaker to act, or any combination of fault currents and clearing times not exceeding 300 kA cycles.

- When working on de-energized parts and inside the flash protection boundary for nearby live exposed parts - If the parts cannot be de-energized, use barriers such as insulated blankets to protect against accidental contact or wear proper PPE.

**Arc Flash Hazard Analysis**

An arc flash hazard analysis includes the following:

- Collect data on the facility’s power distribution system.
- Arrangement of components on a one-line drawing with nameplate specifications of every device.
- Lengths and cross-section area of all cables.
- Contact the electric utility for information including the minimum and maximum fault currents that can be expected at the entrance to the facility.
- Conduct a short circuit analysis followed by a coordination study is performed.
- Feed the resultant data into the NFPA 70E equations.
- These equations produce the necessary flash protection boundary distances and incident energy to determine the minimum PPE requirement.
- The flash protection boundary is the distance at which PPE is needed to prevent incurable burns (2nd degree or worse) if an arc flash occurs. (It is still possible to suffer 1st or 2nd degree burns.)
- For systems of 600 volts and less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA (kilo amps) and a clearing time of 6 cycles (0.1 seconds) for the circuit breaker to act, or any combination of fault currents and clearing times not exceeding 300 kA cycles (5000 ampere seconds).

When working on de-energized the parts, but still inside the flash protection boundary for nearby live exposed parts:

- If the parts cannot be de-energized, barriers such as insulated blankets must be used to protect against accidental contact or PPE must be worn.
- Employees shall not reach blindly into areas that might contain exposed live parts.
- Employees shall not enter spaces containing live parts unless illumination is provided that allows the work to be performed safely.
- Conductive articles of jewelry and clothing (such as watchbands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, metal headgear, or metal frame glasses) shall not be worn where they present an electrical contact hazard with exposed live parts.
- Conductive materials, tools, and equipment that are in contact with any part of an employee’s body shall be handled in a manner that prevents accidental contact with live parts. Such materials and equipment include, but are not limited to long conductive objects such as ducts, pipes, tubes, conductive hose and rope, metal-lined rules and scales, steel tapes, pulling lines, metal scaffold parts, structural members, and chains.
- When an employee works in a confined space or enclosed spaces (such as a manhole or vault) that contains exposed live parts, the employee shall use protective shields, barriers or insulating materials as necessary to avoid contact
with these parts. Doors, hinged panels, and the like shall be secured to prevent them from swinging into employees. Refer to the confined space entry program.

Inspections

Electrical equipment, tools, and appliances must be inspected prior to each use. The use of a hard fixed GFCI or a portable GFCI adapter shall be used with all portable hand tools, electric extension cords, drop lights and all 110 volt equipment.

Faulty equipment, tools, or appliances shall be removed from service immediately and tagged “Out of Service”, dated and signed by the employee applying the tag.

Equipment

Test instruments, equipment, and their accessories shall meet the requirements of ANSI/ISA-61010-1-Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1 General Requirements, for rating and design requirements for voltage measurement and test instruments intended for use on electrical systems 1000 Volts and below.

When test instruments are used for the testing for the absence of voltage on conductors or circuit parts operating at 50 volts or more, the operation of the test instrument shall be verified before and after an absence of voltage test is performed.

Personal Protective Equipment

All insulating PPE must be inspected before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection.

Maximum test intervals for rubber insulating personal protective equipment shall include:
- Blankets - before first issue/every 12 months thereafter
- Gloves - before first issue and every 6 months
- Sleevers - before first issue and every 12 months
- Covers and line hose shall be testing if insulating value is suspect.

Energized Electrical Work Permit

Work on energized electrical conductors or circuit parts that are not placed in an electrically safe work condition shall be considered energized electrical work and shall be performed by written permit only.

Lighting

Employees shall not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Where lack of illumination or an obstruction precludes observation of the work to be performed employees shall not perform any task within the Limited Approach Boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.
Extension Cords

Use only three-wire, grounded, extension cords and cables that conform to a hard service rating of 14 amperes or higher, and grounding of the tools or equipment being supplied.

Only commercial or industrial rated-grounded extension cords may be used in shops and outdoors.

Cords for use other than indoor appliances must have a rating of at least 14 amps.

Cords must have suitable strain relief provisions at both the plug the receptacle ends.

Work lamps (drop light) used to power electrical tools must have a 3 wire, grounded outlet, unless powering insulated tools.

Adapters that allow three wire grounded prongs connected to two wire non-grounded outlets are strictly prohibited.

Cords may not be run through doorways, under mats or carpets, across walkways or aisles, concealed behind walls, ceilings or floors, or run through holes in walls, or anywhere where they can become a tripping hazard.

High current equipment or appliances should be plugged directly into a wall outlet whenever possible.

All extension cords shall be plugged into one of the following:
- A GFCI outlet
- A GFCI built into the cord
- A GFCI adapter used between the wall outlet and cord plug

All extension cords and or electrical cords shall be inspected daily or before each use, for breaks, plug condition and ground lugs, possible internal breaks, and any other damage. If damage is found, the extension cord or electrical cord shall be remove from service and repaired or replaced.

Extension cords shall not be used on compressor skid to operated heat tapes or any other type of equipment on a temporary basis. Heat tapes or other equipment shall be hard wired per applicable electrical codes.

Outlets

Outlets connected to circuits with different voltages must use a design such that the attachment plugs on the circuits are not interchangeable.

Multiple Outlet Boxes

Multiple outlet boxes must be plugged into a wall receptacle. Multiple outlet boxes must not be used to provide power to microwave ovens, toasters, space heaters, hot plates, coffeepots, or other high-current loads.
Double Insulated Tools

Double insulated tools must have the factory label intact indicating the tool has been approved to be used without a three wire grounded supply cord connection.

Double insulated tools must not be altered in any way, which would negate the factory rating.

Switches, Circuit Breakers, and Disconnects

All electrical equipment and tools must have an on and off switch and may not be turned on or off by plugging or unplugging the supply cord at the power outlet.

Circuit breaker panel boxes and disconnects must be labeled with the voltage rating.

Each breaker within a breaker panel must be labeled for the service it provides.

Disconnect switches providing power for individual equipment must be labeled accordingly.

Ladders

Only approved, non-conductive ladders, may be used when working near or with electrical equipment, which includes changing light bulbs.

Ladders must be either constructed of wood, fiberglass, or have non-conductive side rails.

Wood ladders should not be painted, which can hide defects, except with clear lacquer.

When using ladders they shall be free from any moisture, oils, and greases.

Energized and Overhead High Voltage Power Lines & Equipment

A minimum clearance of 10 feet from high voltage lines must be maintained when operating vehicular and mechanical equipment such as forklifts, cranes, winch trucks, and other similar equipment.

When possible, power lines shall be de-energized and grounded or other protective measures shall be provided before work is started.

Minimum approach distance to energized high power voltages lines for unqualified employees is 10 feet.

Confined or Enclosed Work Spaces

When an employee works in a confined or enclosed space that contains exposed energized parts, the employee shall isolate the energy source and turn off the source and lock and tag out the energy source (Only qualified electricians can work on an exposed energy source).

Protective shields, protective barriers or insulating materials as necessary shall be provided.

Enclosures, Breaker Panels, and Distribution Rooms

A clear working space must be maintained in the front, back and on each side of all electrical enclosures and around electrical equipment for a safe operation and to permit access for maintenance and alteration.

A minimum two-foot working floor space in front of panels and enclosures shall be painted yellow.

Employees may not enter spaces containing exposed energized parts unless illumination is provided that enables the employees to work safely.

Housekeeping in distribution rooms must receive high priority to provide a safe working and walking area in front of panels and to keep combustible materials to the minimum required to perform maintenance operations.

All enclosures and distribution rooms must have “Danger: High Voltage – Authorized Personnel Only” posted on the front panel and on entrance doors.

Flammable materials are strictly prohibited inside distribution rooms (Boxes, rags, cleaning fluids, etc.)

Lock Out/Tag Out

No work shall be performed on (or near enough to them for employees to be exposed due to the dangers of tools or other equipment coming into contact with the live parts) live parts and the hazards they present.

If any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits energizing the parts shall be locked out or tagged or both.

Conductors and parts of electrical equipment that have been de-energized but not been locked or tagged out shall be treated as live parts.

Only authorized personnel may perform lock out/tag out work on electrical equipment and will follow Linear Controls, Inc. or the owner/client Control of Hazardous Energy – Lock out/Tag Out Program.

Authorized personnel will be trained in lock out/tag out procedures.
Affected personnel will be notified when lock out/tag out activities are being performed in their work area.

**Contractors**

Only approved, certified, electrical contractors may perform construction and service work on Linear Controls, Inc. or client property.

It is the Manager/Supervisors responsibility to verify the contractor’s certification.

**Fire Extinguishers**

Approved fire extinguishers must be provided near electrical breaker panels and distribution centers.

Water type extinguishers shall not be located closer than 50 feet from electrical equipment.

**Electric Shock-CPR**

If someone is discovered that has received an electric shock and is unconscious, first check to see if their body is in contact with an electrical circuit. Do not touch a person until you are sure there is no contact with an electrical circuit.

When it is safe to make contact with the victim, begin CPR if the person’s heart has stopped or they are not breathing.

Call for help immediately.

**Training**

Employees are trained to understand the specific hazards associated with electrical energy. Employees shall be trained in safety-related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with their respective jobs. Employees shall be trained to identify and understand the relationship between electrical hazards and possible injury.

Employees shall be trained in the skills and techniques to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment, to determine the nominal voltage of exposed energized electrical conductors and circuit parts, the approach distances specified in the table listed below (NFPA 70E Table 103.2) and the decision making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the task safely.

Employees shall be retrained when the employee is not complying with safety-related work practices or when workplace changes necessitate the use of safety-related work practices that are different from those that the employee would normally use.
Limited Approach Boundary

<table>
<thead>
<tr>
<th>Nominal System Voltage Range, Phase to Phase</th>
<th>Exposed Movable Conductor</th>
<th>Exposed Fixed-Circuit Part</th>
<th>Restricted Approach Boundary (Allowing for Accidental Movement)</th>
<th>Prohibited Approach Boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 50 Volts</td>
<td>Not Specified</td>
<td>Not Specified</td>
<td>Not Specified</td>
<td>Not Specified</td>
</tr>
<tr>
<td>51 to 300 Volts</td>
<td>10 ft. 0 in.</td>
<td>3 ft. 6 in.</td>
<td>Avoid Contact</td>
<td>Avoid Contact</td>
</tr>
<tr>
<td>301 to 750 Volts</td>
<td>10 ft. 0 in.</td>
<td>3 ft. 6 in.</td>
<td>1 ft. 0 in.</td>
<td>0 ft. 1 in.</td>
</tr>
<tr>
<td>751 to 15 KV</td>
<td>10 ft. 0 in.</td>
<td>5 ft. 0 in.</td>
<td>2 ft. 2 in.</td>
<td>0 ft. 7 in.</td>
</tr>
<tr>
<td>15.1 KV to 36 KV</td>
<td>10 ft. 0 in.</td>
<td>6 ft. 0 in.</td>
<td>2 ft. 7 in.</td>
<td>0 ft. 10 in.</td>
</tr>
<tr>
<td>36.1 KV to 46 KV</td>
<td>10 ft. 0 in.</td>
<td>8 ft. 0 in.</td>
<td>2 ft. 9 in.</td>
<td>1 ft. 5 in.</td>
</tr>
<tr>
<td>46.1 KV to 72.5 KV</td>
<td>10 ft. 0 in.</td>
<td>8 ft. 0 in.</td>
<td>3 ft. 2 in.</td>
<td>2 ft. 1 in.</td>
</tr>
<tr>
<td>72.6 KV to 121 KV</td>
<td>10 ft. 0 in.</td>
<td>8 ft. 0 in.</td>
<td>3 ft. 3 in.</td>
<td>2 ft. 8 in.</td>
</tr>
<tr>
<td>138 KV to 145 KV</td>
<td>11 ft. 0 in.</td>
<td>10 ft. 0 in.</td>
<td>3 ft. 7 in.</td>
<td>3 ft. 1 in.</td>
</tr>
<tr>
<td>161 KV to 169 KV</td>
<td>11 ft. 8 in.</td>
<td>11 ft. 8 in.</td>
<td>4 ft. 0 in.</td>
<td>3 ft. 6 in.</td>
</tr>
<tr>
<td>230 KV to 242 KV</td>
<td>13 ft. 0 in.</td>
<td>13 ft. 0 in.</td>
<td>5 ft. 3 in.</td>
<td>4 ft. 9 in.</td>
</tr>
<tr>
<td>345 KV to 262 KV</td>
<td>15 ft. 4 in.</td>
<td>15 ft. 4 in.</td>
<td>8 ft. 6 in.</td>
<td>8 ft. 0 in.</td>
</tr>
</tbody>
</table>

Employees shall be trained in safety related work practices that pertain to their respective job assignments.

Safe work practices shall be employed to prevent electric shock or other injuries resulting for either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.

Training shall be documented and maintained for the duration of the employee's employment. Documentation shall be made when the employee demonstrates proficiency, be maintained for the duration of the employee's employment, and contain each employee's name and date of training.

Training shall be conducted every three (3) years.
19. ELECTRICAL SAFETY PLAN FOR CONSTRUCTION

Purpose

The purpose of this plan is to state Linear Controls, Inc. intent to comply with OSHA electrical requirements, found in Subpart K of 29 CFR 1926, for the practical safeguarding of employees involved in construction work.

A written description of the program, including the specific procedures adopted by Linear Controls, Inc., is available at all job sites for inspection and copying by OSHA and any affected employee.

Administrative Duties

The Safety Coordinator is responsible for developing, implementing and maintaining the Electrical Safety Plan for Construction. The Safety Coordinator is qualified by appropriate training and experience that is commensurate with the complexity of the plan, to administer and oversee Linear Controls, Inc. electrical safety plan and conduct the required evaluations of plan effectiveness.

Excavation Safety

Prior to excavating, by hand or machine, personnel must mark the dig site indicating all underground facilities. The Linear Controls, Inc. representative, at the pre-construction meeting, shall obtain a contact person or telephone number to request underground facilities marking services. Under no circumstances shall excavating commence prior to the location and marking of underground facilities.

Open Trench Protection

The opening of trenches and holes should be limited, on a daily basis, to the quantity of trench or holes that equipment can be placed into and the trench or holes be back filled in that days work.

Restricted Access Work Area

- If open trenches or excavated holes remain at a work site, unattended, then marking with yellow hazard warning tape shall be accomplished. The marking shall extend around the entire perimeter of the excavation. Yellow hazard warning tape shall be attached to wooden or metal supports.

Public Access Work Area

- If open trenches or excavated holes remain at a work site, unattended, with risk of exposure to “the public” or animals, then an orange plastic fence shall be installed around the perimeter of the excavation. The plastic fence material shall be supported by attachment to metal poles at eight (8) foot intervals and driven into the ground.
Equipment Grounding Conductor Program

This written plan is intended to establish and implement specific procedures for an Equipment Grounding Conductor program covering:

1) All cord sets.
2) Receptacles which are not a part of the building or structure.
3) Equipment connected by cord and plug which are available for use or used by employees.

These requirements apply to all of Linear Controls, Inc. job sites.

This part of the written plan complies with the requirements of CFR 1926.404(b)(1)(iii).

- The Safety Coordinator is responsible for the implementation of the plan.

A written description of the program, including the specific procedures adopted by Linear Controls, Inc. shall be available at the jobsite for inspection and copying by the Assistant Secretary and any affected employee.

Equipment Grounding Conductor Inspection

Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, are visually inspected by the user before each days use for:

1) External defects, such as deformed or missing pins or insulation damage.
2) Indications of possible internal damage.

Equipment found damaged or defective is not to be used until repaired and is to be removed from service immediately by the person finding it and handed over to the Installation Supervisor.

Equipment Grounding Conductor Testing

The following tests are performed on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord-and-plug connected equipment required to be grounded:

1) All equipment-grounding conductors are tested for continuity with a volt-ohm meter and are electrically continuous.
2) Each receptacle and attachment cap or plug is tested for the correct attachment of the equipment-grounding conductor and that the equipment-grounding conductor is connected to its proper terminal.

All required tests are performed:

1) Before initial use.
2) Before equipment is returned to service following any repairs.
3) Before equipment is used after any incident which can be reasonably suspected to have caused damage (i.e. when a cord set is run over.)
4) At intervals not to exceed three (3) months, except those cord sets and receptacles which are fixed and not exposed to damage, these will be tested at intervals not exceeding six (6) months.
Linear Controls, Inc. does not provide or permit employees to use any equipment which has not met the requirements of this program.

Recording Keeping

Test performed as required in this program are recorded. The test records identify each receptacle, cord set, and cord-and-plug connected equipment that passed the test and indicate the last date the test was performed or the interval for which it was tested. This record shall be kept by means of logs, color coding, or other effective means and shall be maintained until replaced by a more current record.

The Supervisor is responsible for maintaining these records.

The record is made available on the job site for inspection by OSHA and any affected employee.

Lockout and Tagging of Circuits

This written procedure includes procedural steps for each one of the following:

- De-energizing equipment
- Application of locks and tags
- Verification of de-energized condition
- Re-energizing equipment

While any employee is exposed to contact with parts of fixed electrical equipment or circuits which have been de-energized, the circuits energizing the parts will be locked out or tagged or both according to the requirements of this written plan.

Conductors and parts of electrical equipment that have been de-energized but have not been locked out or tagged according to these procedures will be treated as energized parts.

The requirements must be followed in the order in which they are presented.

Linear Controls, Inc. maintains this written copy of procedures and makes it available for inspection by employees and OSHA.

De-energizing Equipment

Safe procedures for de-energizing circuits and equipment will be determined by the Installation Supervisor before the circuits or equipment is de-energized.

The circuits and equipment to be worked on will be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches and interlocks, may not be used as the sole means for de-energizing circuits or equipment. Interlocks for electrical equipment may not be used as a substitute for lockout and tagging procedures.

Stored electric energy that might endanger personnel will be released.
Capacitors will be discharged and high capacitance elements will be short-circuited and grounded if the stored electric energy might endanger personnel.

If the capacitors or associated equipment are handled in meeting this requirement, they will be treated as energized. Stored non-electrical energy in devices that could re-energize electric circuit parts will be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.

**Application of Locks and Tags**

A lock and tag will be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed. Employees can obtain these locks and tags from the Installation Supervisor.

The lock will be attached so it prevents persons from operating the disconnecting means unless they resort to undue force or the use of tools.

Each tag will contain a statement prohibiting unauthorized operation and the disconnection means and the removal of the tag.

If a lock cannot be applied, or if Linear Controls, Inc. can demonstrate that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.

If a tag is used without a lock, the tag will be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

A lock may be placed without a tag only under the following conditions:
1) Only one circuit or piece of equipment id de-energized.
2) The lockout period does not exceed beyond the current work shift.
3) Employees exposed to the hazards associated with re-energizing the circuit or equipment is familiar with the procedure.

**NOTE:** Use of either of these exceptions must be approved by the Installation Supervisor.

**Verification of De-energized Condition**

The following requirements must be met before any circuits or equipment can be considered as de-energized:
1) A qualified person will operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
2) A qualified person will use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and will verify that the circuit elements and equipment parts are de-energized. The test will also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage back feed even though specific parts of the circuit have been de-energized and presumed to be safe.

If the circuit to be tested is over 600 volts, nominal, the test equipment will be
checked for proper operation immediately before and immediately after this test.

Re-energizing Equipment

The following requirements will be met, in order given, before circuits or equipment is re-energized, even temporarily:
1) A qualified person will conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds and other such devices have been removed, so that the circuits and equipment can be safely energized.
2) Employees exposed to the hazards associated with re-energizing the circuit or equipment will be warned to stay clear of circuits and equipment.
3) Each lock and tag will be removed by the employee who applied it or under his/her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that the employee who applied the lock or tag is not available at the workplace, and the employee is aware that the lock or tag has been removed before he/she resumes work at that workplace.
4) There will be a visual determination that all employees are clear of the circuits and equipment.

Training

Training is provided to ensure that employees are familiar with the requirements of this plan. The Safety Coordinator is responsible for conducting this training.

The training program addresses the required written elements of the Electrical Safety Plan for Construction.

The Electrical Safety Plan for Construction is evaluated and updated annually by the Safety Coordinator to ensure the continued effectiveness of the program.
20. TRENCHING, SHORING AND EXCAVATION AWARENESS

Purpose

The purpose of this section is to provide basic awareness pertaining to Trenching, Shoring, and Excavation activities.

Surface Encumbrances

All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

Underground Installations

The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation.

Utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation. When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours (unless a longer period is required by state or local law), or cannot establish the exact location of these installations, the employer may proceed, provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used.

Access and Egress

Structural Ramps

Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.

Structural ramps used in lieu of steps shall be provided with cleats or other surface treatments at the top surface to prevent slipping.

Means of Egress from Trench Excavations

A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are four (4) feet (1.22 m) or more in depth so as to require no more than 25 feet (7.62 m) of lateral travel for employees.
Exposure to Vehicular Traffic

Employees exposed to public vehicular traffic shall be provided with, and shall wear warning vests or other suitable garments marked with or made of reflective or high-visibility material.

Exposure to Falling Loads

No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.

Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, in accordance with CFR 1926.601(b)(6), to provide adequate protection for the operator during loading and unloading operations.

Warning System for Mobile Equipment

When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

Hazardous Atmospheres

Tests should be conducted for air contaminants (oxygen, flammable gases, etc., and provide ventilation where necessary.

Protection from Hazards Associated with Water Accumulation

Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

Shield systems must be inspected by a competent person.

Inspections

Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.
Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

Fall Protection

Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. Guardrails which comply with CFR 1926.502(b) shall be provided where walkways are six (6) feet (1.8 m) or more above lower levels.

Soil Classifications

The determination of soil types & special considerations must be done in specific measures. Shoring, sloping, shield & excavation as needed. Timber shoring, aluminum hydraulic shoring must determined according to the appendixes A & C of the OSHA standard. The devices should be used while in good repair & maintenance; if damaged, they must be inspected. The employees should be protected from hazards of falling, rolling, or sliding materials or equipment. They should not be subjected to excessive forces and be installed to protect employees from lateral loads, employees must be restricted from being in the shield when installing or removing; the shield must be designed to resist calculated trench forces.

Definitions

“Competent Person” means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Qualifications:
- Knowledge of soils and soil classification.
- Understands design and use of protective systems.
- Ability to recognize and test hazardous atmospheres.
- Documented training.
- Prior excavation experience.

Responsibilities:
- Site safety briefings on excavation safety.
- Daily excavation inspections.
  - More frequent in conditions change (i.e. freeze/thaw, rain, vibration)
- Physically located at the excavation site.
21. WELDING, CUTTING, BRAZING AND HOT WORK

Purpose

The purpose of this procedure is to give company personnel an awareness of safe welding, cutting, brazing, and hot work practices to enable them to recognize potential hazards.

Implementation of this procedure will enable the company to comply OSHA 29 CFR 1910.252, 253, 254, and 255 Welding, Cutting, and Brazing Guidelines.

Scope

This procedure applies to welding, cutting, and brazing activities on company and client premises.

Hazards of Welding Activities

Unless certain precautions are taken, welding can be very dangerous. Both the welder and those who come in contact with the welder can be seriously injured.

- Common hazards include burns and fires from hot metals and sparks, eye and skin damage from infra-red and ultra-violet rays, and exposure to noxious fumes and gases.
- The possibility of electric shock and strains or sprains from handling materials and equipment also exists.
- Even though company personnel are not welders, they should be aware of safe practices as they relate to welding.
- It is important to understand the hazards involved and to take precautions to prevent fires, explosions, or personal injuries from exposure to toxic fumes.
- Even in metal cutting or repair jobs that are considered routine, workers should always follow established safety procedures and resist the temptation to take short cuts.
- For additional information, Linear Controls, Inc. employees are encouraged to consult the National Fire Protection Association (NFPA) Standard.

Safe work practices

Supervisors, welders, cutters, and employees engaged in welding and related activities must have proper equipment, health and safety information and training, and adequate personal protective equipment.

Cutters, welders and their supervisors shall be suitably trained in the safe operations of their equipment and the safe use of the welding or cutting process to be used. Welders can get hurt by any of the following by-products of the welding process:

1) Fire - Sparks and hot slag can be very dangerous. Make sure there are no combustible materials in the welding area.
2) Noise - Hearing protection is available to help reduce the risk of hearing damage.
3) Heat - Slag and sparks can cause burns without direct contact because of the intense heat produced by welding. Wear personal protective equipment at all times to avoid burns.
4) Electric Shock - Electrical equipment in general is dangerous, and so is welding equipment. Check for loose connections and make sure the equipment is properly grounded.
5) Leads - Make sure to inspect your welding lead daily. Leads in need of repair should not be used.

Ultraviolet Radiation

Also called UV radiation, ultraviolet light can cause welding burns.

- Wear protective hoods and clothing to avoid injuries.
- Welding shields should be used to help prevent injuries to others working in the area.

Exposure to UV radiation can cause a flash burn to the eyes called welders flash.
- This condition can feel like you have sand in your eyes.
- Never look directly at the arc when working in the area of welding activities.

Precautions

It is preferable to remove all welding or cutting operations to non-hazardous areas. If disassembly or removal is deemed unacceptable, or if customer-directed repairs are required on-site, follow the general precautions and procedures listed below.

1) Notify the customer of the necessity of the proposed on-site welding or cutting.
2) Obtain written permission for the work from the highest available supervisor in charge of the site.
3) Non-supervisory authority shall not be accepted.
4) Notify the supervisor of the need to alert the site safety department of the proposed work.

Fire Watch

The Fire Watch is the person designated to watch the welding and/or cutting to be performed in a given area.

Assigned fire watchers must be trained in the use of fire extinguishing equipment and familiar with the facilities for sounding an alarm in the event of a fire.

A Fire Watch will be required if:

1) Welding or cutting is in an area where anything than a minor fire might develop.
2) Combustible materials are closer than 35 feet to the point of operation.
3) Combustible materials are 35 ft. or more away but are easily ignited.
4) Wall or floor openings within a 35 ft. radius expose combustible materials.
5) Combustible materials are adjacent to the opposite side of metal partitions, ceilings, or roofs.

The Fire Watch must be:

1) Familiar with the facilities for sounding the alarm in the event of a fire.
2) Trained in Fire Watch procedures.
3) Equipped and trained in the use of fire extinguishers and water and able to extinguish any spot fires that might start at all welding operations.

The Fire Watch will:
1) Have no other duty to perform while on watch.
2) Have fire extinguishers readily available.
3) Will watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the available equipment, or otherwise sound the alarm.
4) Remain on duty for at least a half hour after completion of the welding or cutting operations has concluded to detect and extinguish possible smoldering fires.

Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations.
- Obtain the needed written Hot Work Permit if necessary.
- Recognize that if you are signing a receipt on a Hot Work Permit, you are acknowledging that you understand all precautions that must be followed.
- Post the Hot Work Permit and keep it in the immediate vicinity of the work.

Site Preparation

Thoroughly clean all floors, package interiors, and engine and ancillary equipment of all combustibles.

Relocate all movable combustibles at least 35 feet from the work.
- Sparks can fly 35 feet or more.
- Cover all non-movable combustibles with suitable fireproof sheeting or shields, especially exposed cable/wiring.

Where possible, ventilate the weld area with clean outside air to prevent the induction of hazardous atmosphere.

Immediately inform your supervisor or the customer of any decisions to shut down the work.

Confined Space Welding

Personnel welding in a confined space will take same precautions and operational procedures as all other confined space operations.

Additional confined space welding procedures are:
1) All confined space welding operations will have proper signs and barricades set up to identify the work area.
2) The confined space will have proper ventilation.
3) When hazardous fumes, gases, or dust from welding or cutting on material are possible in a confined space, special ventilation and/or respirators will be used.
4) All gas cylinders will be properly secured outside of the confined space and have gas cylinder shutoff valves.
5) All personnel working in the confined space will be wearing life lines secured to a point outside of the confined space.
6) Welding electrodes will be removed from the confined space.

**Hazardous Fumes**

Any welding, cutting or burning of lead base metals, zinc, cadmium, mercury, beryllium or exotic metals or paints not listed here shall have proper ventilation or respiratory protection.

**Weld Preparation**

**Fire Hazards**

If the object(s) to be welded or to be cut cannot be readily removed from possible fire hazards, all movable fire hazards in the vicinity shall be moved to a safe place.

**Guards**

If the object(s) to be welded or to be cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.

**Restrictions**

If the requirements for safe welding or cutting cannot be followed, then welding or cutting operations shall not be performed.

**Proper Protective Equipment**

If working in the same area as welders, avoid looking directly at the arc. Avoid wearing polyester or nylon clothing; cotton or cotton blend is preferred when working near welding activities.

Welders must observe the following PPE requirements:

1) Welders should always wear proper eye protection; safety goggles or glasses with tinted lenses under the welding helmet.
2) Flame-resistant aprons, vests, leggings, capes, and gauntlet gloves should be worn as needed.
3) Pockets, cuffs and collars on shirts and jackets should be covered or buttoned.
4) Pants should be rolled-up inside rather than outside.
5) When welding or cutting lead, zinc, cadmium-coated, lead-bearing, or other toxic materials, welders may be required to wear a respiratory device.

**Personnel**

Workers in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be instructed and judged competent by their employers for this important work before being left in charge.
Cylinder Precautions

1) Gas identification should be stenciled or stamped on the cylinder or affixed with a label.
   a. No compressed gas cylinder should be accepted for use that does not legibly identify its content by name.
2) Visual and other inspections shall be conducted to determine that compressed gas cylinders are in a safe condition.
   a. Hoses and connections should be protected and inspected regularly for damage.
3) Never use a cylinder as a prop or as a work bench.
   a. Welders have cut into cylinders in this way with disastrous results.
4) Cylinders should be kept away from any source of heat such as radiators, heaters and sunlight.
5) Cylinders should be stored in well ventilated areas.
   a. Storage areas for full and empty cylinders must be designated and labeled.
6) Avoid rough handling, dropping or kicking cylinders.
7) Cylinders must be secured in an upright position and caps are to be in place when cylinders are not in use and before they are moved.
8) Never use a cylinder that is leaking.
9) Acetylene and oxygen cylinders must be repaired only by authorized personnel.
10) Keep sparks, flames, and heat away from cylinders.
11) Leaking cylinders should be moved to an isolated, well ventilated area, away from ignition sources.
    a. Never test for leaks with flame, use soapy water.
    b. If the leak is at the junction of the cylinder valve and cylinder, do not try to repair it. Contact the supplier and ask for response instructions.
12) All cylinders must be properly secured to prevent them from being knocked over or damaged.
13) Never force connections that do not fit.
14) Always attach an acetylene pressure reducing regulator when using acetylene from a cylinder.
15) Never use oxygen for compressed air.
16) Do not place cylinders under equipment or any other place where oil may leak onto oxygen valve and cause a serious explosion.
17) When welding in tanks or vessels, keep cylinder and as much hose as possible outside of tank to prevent leakage of explosive gas into tank.
18) Locate cylinders outside of tank vessel or enclosed space.
19) All oxygen and acetylene bottles, when in use and not on a regular cart, must be tied together and supported by a steel harness with brace to the ground.
20) Acetylene and oxygen bottles shall always be in an upright position.
21) Cylinders should be stored in designated areas away from elevators, stairs, or gangways.
    a. Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) by a minimum distance of 20 feet.
22) A "NO SMOKING OR OPEN FLAMES" sign shall be posted wherever oxygen and acetylene cylinders are stored so as to warn employees of the combustible materials in that area.
23) Cylinders should be marked as “MT” and dated when empty.
a. Never mix gases in cylinder and only professionals should refill cylinders.
b. Empty cylinders should be handled as carefully as full cylinders.

24) Be fully alert to the explosive potential you are handling.

Cylinder Valve Precautions

1) Valve protection caps shall not be used for lifting cylinders from one vertical position to another.
2) Cylinder valves shall be closed when work is finished.
3) Valve protection caps, where cylinder is designed to accept a cap, shall always be in place and hand tight, except when cylinders are in use or connected for use.
   a. When a cylinder cap cannot be removed by hand, the cylinder shall be tagged “Do Not Use” and returned to the designated storage area for return to vendor.
4) Cylinder must be equipped with the correct regulators.
   a. Make sure valve outlets are clean.
   b. Visually inspect for oil, solvents or grease.
5) An acetylene cylinder valve shall not be opened more than one and one-half turns of the spindle and preferably no more than three-fourths of a turn.
6) No one shall tamper with safety devices on cylinders or valves.
7) Never force connections that do not fit.
   a. Only tools provided by the supplier should be used to open and close cylinder valves.
8) Oxygen and acetylene cylinder valves must be closed when changing torches.
   a. Never pinch the hose to shut off the flow.

Good Working Habits and Personal Safety

1) Make sure you are adequately protected before you start welding.
2) Wear protective equipment and clothing as required for the job at hand.
   a. Different jobs require different equipment.
3) Be sure you are fully protected from ultraviolet radiation, follow these precautions:
   a. Cover all skin surfaces to protect yourself from arc burns, from sparks and spatter.
   b. Keep sleeves rolled down and wear gloves at all times.
   c. Wear leather clothing such as an apron, sleeves and spats in cases of prolonged exposure to arc radiation.
4) Wear a leather cap or other suitable head covering, shoulders or sleeves as required when working overhead.
5) Use a welder's helmet or goggles that the type of welding calls for.
   a. Be sure to use the correct shade of lens as required by the current setting.
6) Wear high snug fitting shoes.
   a. Avoid wearing low or loose shoes which would allow hot spatter to get inside.
7) Wear clean clothes.
   a. Avoid wearing clothing that has been stained with oil and greases.
8) Wear cuff-less pants; by wearing cuff-less pants you eliminate a dangerous spark and spatter trap.
9) Proper rigging, hoists, ladders and work platform must be used to prevent accidents.
   a. Many people have been injured by improper rigging and inadequate work platforms.

Work Area and Operations

Be certain that helpers on a welding job are properly equipped, clothed and have correct eye protection.

Location of equipment and running of leads should be accomplished so as to not create a hazard to other people in the work area.

Use adequate screening around job to protect others from eye injury or burns.

Maintaining Equipment

Properly maintained equipment is safe and will produce quality results.

Operators should report any equipment defect or safety hazards.
   • Discontinue use of the equipment until its safety has been assured.
   • Repairs shall be made by qualified personnel only.

All equipment or tooling should be inspected before use.
   • This will insure that the equipment is in proper order.
   • Inspection must cover not only the mechanical fitness, but also the cleanliness of a machine.
   • Be sure the machine is clean.
     o Dirty machines are the cause of a large percentage of accidents, scrapped work and damaged machines.
   • Replacement of parts or tooling of a machine which are defective should be done immediately.
     o The failure to replace defective parts can cause a malfunction which is dangerous to the operator and others in the vicinity.
   • The failure to replace parts immediately can also cause further damage to the machine and can result in poor quality end products.

Hot Work Procedures

1) Prior to performing hot work, alternatives shall be considered to minimize risk to personnel and customer facilities.
2) An Authorized Individual(s) may approve a designated welding area for specific jobs or projects.
   a. These designated areas must be clearly communicated and may also require identification/ restriction.
3) The following requirements must be met for designated welding areas on offshore platforms:
   a. The designation must be pre-approved by the MMS.
b. A drawing showing the location of these areas must be maintained at the facility. This area does not require special preparation to isolate from hazardous areas, but does require a Hot Work Entry Permit.

4) Any change in status of designated welding areas must be communicated to the appropriate personnel.

5) When a Hot Work Entry Permit is issued, the Authorized Individual(s) must limit the hot work area to the minimum space required to do the work.

First Aid

First aid equipment shall be available at all times. All injuries shall be reported as soon as possible for medical attention. First aid shall be rendered until medical attention can be provided.

Training

Employees assigned to operate arc welding equipment or similar equipment, will be trained and qualified to operate such equipment.

- Must also be trained on the proper use, handling and storage of compressed gas cylinders.

Employees assigned to operate welding, cutting and brazing equipment will be trained on the requirements of this section.

Definitions

**Authorized individual(s)** are trained and authorized to sign and approve a Hot Work Entry Permit.

**Arc** is a controlled electrical discharge between the electrode and the work piece that is formed and sustained by a gas that has been heated to such a temperature that it can conduct electric current.

**Arc welding** joins or cuts metal parts by heat generated from an electric arc that extends between the welding electrode and the electrode placed on the equipment being welded.

**Brazing** is a welding process that joins materials by heating them to a temperature which will not melt them but will melt a filler material which adheres to them and forms a joint.

**Electrode** is a flux coated wire rod.

**Gas Metal Arc Welding (GMAC)** is an arc welding process that uses an arc between a continuous filler metal electrode and the weld pool; shielding (from the atmosphere) is provided by an externally supplied gas.

**Heating Torch** is a device for directing the heating flame produced by the controlled combustion of fuel gases.
**Oxygen-fuel gas welding** joins metal parts by generating extremely high heat during combustion.

**Resistance welding** joins metals by generating heat through resistance created through the flow of electric current.
22. SCAFFOLDS

Purpose

This procedure identifies safety rules and guidelines for working on or near scaffolds.

The implementation of this procedure will enable Linear Controls, Inc. to comply with OSHA 29 CFR 1926.454.

Procedure

Company personnel can be required to work from scaffolding at client locations.

The following safety precautions will be adhered to at all times:

1) Company personnel will not be allowed to design, erect, or disassemble scaffolding.
2) All company personnel will be classified as User Scaffolding personnel only.
3) It will be the responsibility of the client to design, erect, inspect, and disassemble all scaffolding.
4) Employees must make sure that scaffolding meets regulatory requirements and is providing a safe work surface.
5) If a company employee suspects that a scaffold is not safe he should contact the Client’s Supervisor before starting to work from the scaffold.
6) If the safety issue is not resolved, the employee should contact his supervisor or the Safety Coordinator.
7) If access is achieved with a ladder, follow all ladder safety rules and guidelines.
8) Scaffold platforms shall be fully planked with sturdy, level planking and with gaps no larger than 1 inch (2.54 cm).
9) Scaffold platforms and walkways shall be at least 18 inches (46 cm) wide.
10) Wood platforms must not be painted; however edges may be marked for identification.
11) Scaffold components may not be mixed unless compatible and integrity is maintained.
12) Scaffold components may not be of different metals unless approved by a competent person.
13) Makeshift scaffolds such as boxes, crates and drums must not be used.
14) All scaffolds must be plumb and reasonably level at all times.

Scaffolds shall be erected for work that cannot be done safely from the ground or from solid construction. (Fall protection shall be utilized when personnel are at elevated locations greater than six (6) feet when fixed fall protection is not provided.)

The footing and anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.

Unstable objects shall not be used to support scaffolds or planks.

Any scaffold, including accessories, that is damaged or weakened from any cause shall be immediately repaired or replaced.
All planking shall be Scaffold Grade as recognized by approved grading rules for the species of wood used.

All tube and coupler scaffolds, at a minimum, shall support four (4) times the maximum load or as specified by a professional engineer competent in this field.

Posts shall be accurately spaced, erected on suitable bases, and maintained plumb.

Runners shall be:
1) Erected along the length of the scaffold, located on both the inside and the outside posts at even heights.
2) Coupled to the inside and the outside posts at even heights.
3) Interlocked to form continuous lengths and coupled to each post.
4) Each scaffold shall have bottom runners the length of the scaffold at a maximum height of three feet or less.

A registered professional engineer must design any scaffolds over 125 feet high.

The poles, legs, or uprights of scaffolds shall be plumb and securely and rigidly braced to prevent swaying and displacement.

Scaffold floor planks shall be nailed or otherwise secured, as close together as possible, with No. 12 annealed wire to prevent creeping and falling.

Tools, debris, and materials shall not be allowed to accumulate on scaffold platforms.

Scaffold material must not be left in pipe racks or on structures.

Special precautions shall be taken to protect scaffold members, wire, or fiber ropes from exposure to heat, acid, or caustic exposure areas.

Approval from a competent person must be received before scaffold material can protrude into ladder cages, ladder rungs, or block tower or vessel walkways.

Plywood shall not be substituted for scaffold boards.

Plywood is not allowed as a load-bearing, structure member.

Any planking or platforms that require overlapping must be overlapped at least twelve (12) inches and secured from movement.

Scaffold planks shall extend over their end supports not less than six (6) inches or more than 18 inches, on each end.

Scaffold platforms more than ten (10) feet in height shall be provided with toe boards at least four (4) inches high, a top guardrail 36 inches to 42 inches high, with a mid-rail, and all properly braced above the scaffold floor on all open sides and ends.

Scaffolds six (6) to ten (10) feet in height shall be provided with 4-inch toe boards and a properly braced single handrail unless adequately protected by walls, conduit, pipe, etc., above the floor board.
Scaffolds four (4) feet to ten (10) feet in height that are 45 inches or less in any direction horizontally, shall have guardrails on all open sides and ends of the platform.

Where persons are required to work or pass under the scaffold, scaffolds shall have a screen between the toe board and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. standard wire 1/2-inch mesh or the equivalent.

Overhead protection shall be provided for personnel on a scaffold exposed to overhead hazards.

Personnel shall not work on scaffolds during storms and high winds.

Slippery conditions, including ice and snow, on scaffolds shall be eliminated as soon as possible after they occur, or discontinue work from scaffolds.

Any materials being hoisted onto a scaffold shall have a tag line.

Scaffolds shall not be altered or moved horizontally while they are in use or occupied.

Wheeled scaffolds shall have wheels locked when in use.

Screwed piping or electrical conduit will not be used to support scaffolding.

No scaffold shall be erected, moved, dismantled, modified or altered except by or under the supervision of a competent person.

- Unqualified personnel performing these tasks may create more hazards.
- Unqualified persons found or proven to have modified a scaffold will be subject to disciplinary action.

The competent person building the scaffold must sign the scaffold tag assuring the scaffold is built to specifications and approved for use.

Scaffold tagging systems must be in place at the work location.

- All scaffolds being built must have an approved scaffold tag that is easily accessible.
- A new scaffold tag must be completed and installed on any scaffold that is moved or altered.

A competent person must insure scaffolds are safe prior to and during use.

- This can be accomplished by conducting pre-use and periodic inspections.
- Unsafe equipment or conditions must be tagged out by a competent person and all personnel instructed not to use them.

Personnel using the scaffold are responsible to inspect the scaffold tag for pertinent comments, special precautions, etc., as well as the scaffold, before using the scaffold.
Training Requirements

Each employee who performs work on a scaffold shall be trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards.

The training shall include:

1) The nature of any electrical hazards, fall hazards and falling object hazards in the work area.
2) The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection system and falling object protection systems being used.
3) The proper use of the scaffold, and the proper handling of materials on the scaffold.
4) The maximum intended load and the load-carrying capacities of the scaffolds used.
5) Any other pertinent requirements.

When Linear Controls, Inc. has reason to believe that an employee lacks the skill or understanding needed for safe work involving scaffolds, Linear Controls, Inc. shall retrain each such employee so that the requisite proficiency is regained.

Retraining is required in at least the following situations:

1) Changes at the worksite present a hazard about which an employee has not been previously trained.
2) Changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained.
3) Inadequacies in an effected employee’s work involving scaffolds indicate that the employee has not retained the requisite proficiency.
23. PSM/CONTRACTOR RESPONSIBILITIES

Purpose

Process Safety Management purpose is to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards.

Responsibilities

The contract employer shall assure that each contract employee is trained in the work practices necessary to safely perform his/her job.

The contract employer shall assure that each contract employee is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.

The contract employer shall document that each contract employee has received and understood the required training. The contract employer shall prepare a record which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.

Safe Work Practices and Operating Procedures

Contractor employees shall abide by Linear Controls, Inc. safe work practices to provide for the control of hazards during operations such as lockout/tag out; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees.

The contract employer shall advise Linear Controls, Inc. of any unique hazards presented by the contract employer's work, or of any hazards found by the contract employer's work.

Hot Work Permits

Contract employees shall not perform hot work until a hot work permit is obtained from the employer.

The permit shall document that the fire prevention and protection requirements in 29 CFR 1910.252(a) have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations.
Incident Investigations

The Safety Coordinator shall investigate each incident which resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace.

- Employees must immediately report all accidents, injuries and near misses.

An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident.

Trade Secrets

All contract employers must respect the confidentiality of trade secret information when the process safety information is released to them.
24. LEAD

Purpose

The implementation of this procedure will enable Linear Controls, Inc. to comply with OSHA 29 CFR 1910.1025 and 1926.62 Lead.

Scope

This section applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by 29 CFR 1910.1025(a)(2) is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

1) Demolition or salvage of structures where lead or materials containing lead are present.
2) Removal or encapsulation of materials containing lead.
3) New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, which contain lead, or materials containing lead.
4) Installation of products containing lead.
5) Lead contamination/emergency cleanup.
6) Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed.
7) Maintenance operations associated with the construction activities described in this paragraph.

Training

If Linear Controls, Inc has a workplace in which there is a potential exposure to airborne lead at any level, we shall inform employees of the contents of Appendices A and B of CFR 1910.1025 regulation.

Management shall institute a training program for and assure the participation of all employees who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritation exists.

Management shall provide the training program as initial training prior to the time of job assignment or prior to the start up date for this requirement, whichever comes last. All training will be documented and a certificate of completion will be placed in the employee's training record.

Management shall also provide the training program at least annually for each employee who is subject to lead exposure at or above the action level on any day.

Management shall assure that each employee is trained in the following:

1) The content of this procedure and its appendices.
2) The specific nature of the operations which could result in exposure to lead above the action level.
3) The purpose, proper selection, fitting, use, and limitations of respirators.
4) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant).
   a. There could be adverse effects on reproductive system.
5) The engineering controls and work practices associated with Linear Controls, Inc. job assignment including training of employees to follow relevant good work practices described in Appendix B of CFR 1910.1025 and to ensure employees do not disturb any lead containing material on the job site.
6) The contents of any compliance plan in effect.

Health Effects of Lead

When absorbed into your body in certain doses lead is a toxic substance. Lead can be absorbed into your body by inhalation (breathing) and ingestion (eating). A significant portion of the lead that you inhale or ingest gets into your blood stream. Once in your blood stream, lead is circulated throughout your body and stored in various organs and body tissues. Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body systems.

Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain.

Damage to the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. The most severe, often fatal, form of encephalopathy may be preceded by vomiting, a feeling of dullness progressing to drowsiness and stupor, poor memory, restlessness, irritability, tremor, and convulsions. It may arise suddenly with the onset of seizures, followed by coma, and death. There is a tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic "wrist drop" or "foot drop" and is a manifestation of a disease to the nervous system called peripheral neuropathy.

Chronic overexposure to lead also results in kidney disease with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred. Routine laboratory tests reveal the presence of this kidney disease only after about two-thirds of kidney function is lost. When overt symptoms of urinary dysfunction arise, it is often too late to correct or prevent worsening conditions, and progression to kidney dialysis or death is possible.

Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. There is
evidence of miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves. Lead exposure also may result in decreased fertility, and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected by exposure to lead since lead crosses the placental barrier and poses risks to developing fetuses. Children born of parents either one of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, behavioral disorders or die during the first year of childhood.

Overexposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia. Anemia is characterized by weakness, pallor and fatigability as a result of decreased oxygen carrying capacity in the blood.

**Permissible Exposure Limit (PEL)**

Management shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 ug/m³) averaged over an 8-hour period.

**Exposure Monitoring**

For multi-contractor worksites each employer who has a workplace or operation covered by this standard shall initially determine if any employee may be exposed to lead at or above the action level.

Full shift personal samples shall be representative of the monitored employee's regular, daily exposure to lead.

If the initial determination or subsequent monitoring reveals employee exposure to be at or above the action level but below the permissible exposure limit the employer shall repeat monitoring in accordance with this paragraph at least every 6 months. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the employer may discontinue monitoring for that employee except as otherwise provided in paragraph (d)(7) of CFR 1910.1025.

If the initial monitoring reveals that employee exposure is above the permissible exposure limit the employer shall repeat monitoring quarterly. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the PEL but at or above the action level at which time the employer shall repeat monitoring for that employee at the frequency specified in paragraph (d)(6)(ii) CFR 1910.1025, except as otherwise provided in paragraph (d)(7) of CFR 1910.1025.

**Additional Exposure Assessments**

Whenever there has been a change of equipment, process, control, personnel or a new task has been initiated that may result in additional employees being exposed to lead at or above the action level or may result in employees already exposed at or above the action level being exposed above the PEL, the employer shall conduct additional monitoring in accordance with this paragraph.
Engineering and Work Practice Controls

Linear Controls, Inc. shall implement engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead to or below the permissible exposure limit to the extent that such controls are feasible. Wherever all feasible engineering and work practices controls that can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limit, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them by the use of respiratory protection.

Personal Protective Equipment

If an employee is exposed to lead above the PEL, without regard to the use of respirators or where the possibility of skin or eye irritation exists, the employer shall provide at no cost to the employee and assure that the employee uses appropriate protective work clothing and equipment.

Methods of Compliance

Engineering and Work Practice Controls

Where any employee is exposed to lead above the permissible exposure limit for more than 30 days per year, Management shall implement engineering and work practice controls (including administrative controls) to reduce and maintain employee exposure to lead, except to the extent that the employer can demonstrate that such controls are not feasible. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest feasible level and shall supplement them by the use of respiratory protection.

Action shall be taken to reduce exposure to or below the permissible exposure limit. If engineering and work practice controls do not reduce exposure to acceptable limits, Management may supplement with respirators. If such controls are not feasible, Management must demonstrate and document the reasons.

Management shall establish and implement a written compliance program to reduce exposures to or below the permissible exposure limit, and interim levels if applicable, solely by means of engineering and work practice controls.

Written plans for these compliance programs shall include at least the following:

1) A description of each operation in which lead is emitted; e.g. machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices.
2) A description of the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure to lead.
3) A report of the technology considered in meeting the permissible exposure limit.
4) Air monitoring data which documents the source of lead emissions.
5) A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.
6) A work practice program.
7) An administrative control schedule.
8) Other relevant information.

The written program will be revised and updated every six (6) months.

**Personal Protective Equipment**

At no additional cost to the employee, Linear Controls, Inc. shall provide gloves, hats, vented goggles, shoes or disposable shoe covers.

Protective clothing shall be in clean and dry condition and cleaned at least weekly.

Protective clothing shall be cleaned, laundered, properly disposed and repaired or replaced as necessary.

**Respiratory Protection**

For employees who use respirators required by this section, Management must provide respirators.

**Respiratory Selection**

Linear Controls, Inc. will:

1) Select, and provide to employees, the appropriate respirators.
2) Provide employees with a full face-piece respirator instead of a half mask respirator for protection against lead aerosols that may cause eye or skin irritation at the use concentrations.
3) Provide HEPA filters for powered and non-powered air-purifying respirators.
4) Provide a powered NIOSH Certified Air-Purifying Respirator when an employee chooses to use such a respirator, at no extra cost, and it will provide adequate protection to the employee.
   a. The respirator shall be used during the time period necessary to install or implement engineering or work practice controls.

**Medical Surveillance**

Management shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician.

Management shall provide the required medical surveillance including multiple physician reviews without cost to employees and at a reasonable time and place.

**Biological Monitoring**

At least every six (6) months, Management shall make available biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels to each employee covered under this section. This frequency shall continue until two consecutive blood samples and analyses indicate a blood lead level below 40 ug/100g of whole blood; and at least monthly during the removal period of each employee removed from exposure to lead due to an elevated blood lead level.
Employee notification

Within five working days after the receipt of air monitoring results, Management shall notify in writing each employee whose blood lead level exceeds 40 ug/100 g of the exposure and the action taken or to be taken to reduce exposure to or below the permissible exposure limit. The standard requires temporary medical removal with Medical Removal Protection benefits when an employee's blood lead level exceeds the numerical criterion for medical removal.

Hygiene Facilities and Practices

Management shall assure that in areas where employees are exposed to lead above the PEL, without regard to the use of respirators, food or beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, except in change rooms, lunchrooms, and showers.

Linear Controls, Inc. shall provide clean change rooms and decontamination facilities for employees who work in areas where their airborne exposure to lead is above the PEL, without regard to the use of respirators. Employees are required to wash their hands and face if they have been in contact with lead materials.

Signs

Linear Controls, Inc. shall post warning signs in each work area where lead is present and the PEL is exceeded.
25. CONFINED SPACE

Purpose

The purpose of this procedure is to provide training for Linear Controls, Inc. personnel on confined spaces and associated hazards.

This procedure has been developed to protect the health and well being of company personnel, in the event that they are required to enter confined spaces to clean, inspect, repair, perform testing activities, or rescue personnel. This procedure is mandated by OSHA CFR 29 1910.146.

Scope

This procedure applies to all Company jobs and activities involving work in, or around, confined spaces.

This procedure includes guidelines for recognizing confined spaces, and preventing employee exposure to hazardous conditions associated with confined spaces.

Responsibilities

Company personnel are responsible for recognizing and avoiding confined spaces and the associated hazards.

Company personnel are also responsible for adhering to the requirements of this procedure, by not entering into hazardous confined spaces unless they have been trained and designated as a qualified entrant.

Procedure

The Written Confined Space Program will be reviewed and updated under these circumstances:

1) If after the review of a confined space operation it is determined that the program does not provide sufficient protection for the employees the program will be updated as necessary to be in compliance.

2) The occurrence of an injury or near miss review indicates a change is necessary.

3) If an unauthorized entry of a confined space occurs.

4) Hazards not covered in the permit.

5) Any employee complaint regarding confined entry operation.

6) These updates will be done before subsequent entries are authorized.

7) A review of the confined space program will be conducted annually, using canceled permits.

   a. The program will revised as necessary to bring it in compliance.

   b. Canceled entry permits must be retained for one (1) year after each entry.

8) If there is a change in OSHA CFR 29 1910.146 regulations.

9) The person monitoring the space and/or Entry Supervisor must inform the entrants of potential hazards and the results of tests.

10) Entrants or their representatives will be given an opportunity to participate and review calibrated air monitoring data before entry.
11) The entrants must participate in the permit review and signing.
12) Ventilation must be used and testing must be conducted before entry and during work if the air quality makes it necessary.
13) Employees will be given opportunities to re-evaluate the space if there is any reason to believe changes have occurred.
   a. The plan will be updated if anyone identifies changing conditions which cause the current plan to lose its maximum protection.
14) Employees or their representatives are entitled to request additional monitoring at any time.

Confined Space Identification

Company personnel must be able to recognize and avoid entering a confined space.

A confined space refers to any work environment, above or below the ground, which is totally or partially enclosed and large enough and so configured that an employee can bodily enter and perform assigned work.

1) These spaces will have limited or restricted means for entry or exit.
2) These spaces may contain an accumulation of toxic or explosive gases or vapors which could be life threatening to personnel, therefore are not designed for continuous employee occupancy.

Examples of hazardous confined spaces include:
1) Oil tanks
2) Engine air inlet and exhaust ducts
3) Boilers
4) Storage bins
5) Storage Vessels
6) Process tanks
7) Vessels
8) Vaults
9) Ventilation Ducts
10) Pits
11) Trenches
12) Pipelines
13) Manholes
14) Tunnels
15) Wells
16) Sumps
17) Compartments
18) Excavations

Hazard Identification

Prior to beginning work, company personnel must evaluate their work areas to determine the presence of a confined space.

It is important to consider all potential hazards and to assess whether there is a potential for conditions to change within the space. For example, if a hazardous chemical is present in a closed system, determine if there are any leaks or potential for failures in the system that would allow hazardous atmospheres to develop within the space.
Considerations when conducting a hazard assessment of confined spaces include:

1) Likelihood of hazard occurrence.
2) Consequences of hazard occurrence.
3) Magnitude of hazard.
4) Potential for changing conditions.
5) Strategies for controlling hazards.
6) Plan for emergency rescue.

If the confined space is determined to be a hazardous confined space as defined by this procedure, then employees must not enter into the space unless they are trained to the qualified entrant level.

Entry Requirements for Non-hazardous Confined Spaces

Company personnel who enter confined spaces with no potential hazard associated with the entry, and where entry does not require any special modifications of work procedures, must ensure that the following requirements are implemented:

1) Entrant is trained to the awareness level.
2) Adequate ventilation is maintained throughout the entry.
3) A hazardous atmosphere will not develop during the entry.
4) Personal protective equipment required for the job is worn.
5) Necessary safety procedures are followed.
6) Notification is made to the client or site personnel that a Company employee will be working inside of a confined space.
7) An attendant is standing outside the confined space at all times.
8) A communication system exists for alerting the attendant regarding emergencies or hazardous situations.

Personnel Responsibilities

Only designated personnel will be utilized as "entry supervisors", "attendants", "authorized entrants" and "testers".

An Entry Supervisor is the person in charge of the entry operation.

Linear Controls, Inc. will insure that each Entry Supervisor is properly trained and knows his responsibilities.

The responsibilities of the Entry Supervisor will be, but not limited to:

1) Coordinate entry operations with the host company or any other company involved with the project.
2) When employees of more than one employer (contractor) work in the same permit space the Entry Supervisor shall:
   a. Inform the contractor that the workplace contains permit spaces, and that entry into permit spaces is allowed only by complying with a permit space program.
   b. Inform the contractor of the elements, including any identified hazards and the host contractor’s experience, with the space.
   c. Inform the contractor of any precautions or procedures implemented by the host contractor for employee protection.
d. Coordinate entry operations with the contractor, when both host
contractor personnel and contractor personnel will be working in or near
permit spaces.
e. Debrief the contractor at the conclusion of the entry operations regarding
the permit space program followed, and any hazards confronted or
created during entry operations.

3) Inform the host company of details of the space program that they will follow, and
of any hazards confronted or created in permit spaces, either through a
debriefing or during the entry operation.
4) Issue or obtain the confined space entry permit.
5) Know, be able to recognize, and understand, the hazards that may occur during
an entry.
6) Verify, by checking that the appropriate entries have been made on the permit,
that all tests specified by the permit have been conducted.
7) That all procedures and equipment specified by the permit are in place, before
endorsing the permit and allowing entry to begin.
8) Terminate the entry and cancel the permit, if a condition that is not allowed under
the entry permit arises in, or near, the permit space.
9) Verify that rescue services are available and that the means for summoning them
are operable.
10) Remove unauthorized individuals who attempt to enter the permit space during
operations.
11) Determine that entry operations remain consistent with terms of the entry permit,
and acceptable entry conditions are maintained.

An Attendant is an individual stationed outside one or more permit spaces that monitor
the authorized entrant(s), and perform all attendants’ duties assigned in the employer’s
permit space program.

Linear Controls, Inc. will ensure that each attendant is properly trained, and knows and
understands his responsibilities.

The responsibilities of an Attendant are, but not limited to:
1) Know, be able to recognize, and understand the hazards that may occur during
an entry.
2) Be aware of possible behavioral effects of hazard exposures.
3) If more than one confined space is being monitored by a single attendant, a
handheld portable radio will be used to summon help in case of an emergency.
   a. This will not allow the attendant to be distracted from any other
      responsibilities.
4) As long as entrants remain inside the permit required confined space, an
   attendant must be stationed outside.
5) Continuously maintain an accurate count of entrants.
6) Remain outside the permit space during entry until relieved by another attendant.
7) Communicate with the entrants as necessary to monitor their status, and to alert
   them of the need to evacuate if needed.
8) Monitor activities inside and outside the space to determine if it is safe, and
   orders evacuation immediately under any of the following conditions:
   a. If the attendants detects any prohibited condition.
   b. If the attendant detects the behavioral effects of hazard exposure in an
      entrant.
c. If the attendant cannot attend effectively and safely perform all duties required.

d. Summons rescue and other emergency services as soon as it is determined that entrants may need assistance to escape.

9) Take action when unauthorized persons approach or enter a permit space while entry is under way.

10) Perform non-entry rescues as specified by the employer's rescue plan.

11) Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

The Authorized Entrant is an employee who is authorized by the employer to enter a permit space and perform work activities in the work space.

Linear Controls, Inc. will ensure that all Authorized Entrants are properly trained, know, and understand their responsibilities.

The responsibilities of Authorized Entrants are but not limited to:

1) Should external conditions cause hazardous conditions to develop inside the space, all entrants shall be required to evacuate the space.

2) Know the hazards that may be faced during entry.

3) Make proper use of the equipment required.

4) Communicate with attendant as necessary to enable the attendant to monitor the entrants and to enable the attendant to alert entrants of the need to evacuate as required.

5) Alert the attendant whenever:

   a. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.

   b. The entrant detects a prohibited condition.

6) Exit from the permit space as quickly as possible whenever:

   a. An order to evacuate is given by the attendant or supervisor.

   b. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.

   c. The entrant detects a prohibited condition.

   d. An evacuation alarm is activated.

The Entry Supervisor will ensure that the person testing the confined space conditions will be trained and knows his responsibilities.

Testing will be done by the client or third party person.

**General Rules for Hazardous Confined Space Entry**

In the event of pedestrian or vehicle traffic in the area of the entry project, barriers will be placed as necessary to protect entrants from these external hazards, and to inform employees and other personnel of the existence of permit-required confined space operations.

Before any employee is allowed to enter a confined space classified as hazardous, a Confined Space Entry Work Permit must be completed and signed by the Company Representative.
The purpose of the permit is to ensure that all the necessary precautions have been taken, and that all proper procedures are followed.

Hazardous Confined Space Entry Permit System

The following procedure for implementing the Confined Space Entry will assure that conditions in the permit space are acceptable for entry and during the duration of the entry.

Issuing of the permit:
1) There must be two copies of the Work Permit made.
2) The information contained on both copies must be completed and identical.
3) In most cases, the client's representative will issue the permit.
4) The supervisor, or person in charge, will inspect the work area after it has been prepared for entry and before the permit is issued.

The Confined Space Entry Permit should consist of the following information:
1) Purpose of The Permit:
   a. Space to be entered
   b. This section identifies what the permit is being issued for.
   c. The permit is valid only for the items checked by the supervisor.
2) Hot Work Permit:
   a. Refers to any work involving flame, arc, spark, or other source of ignition.
3) Cold Work Permit:
   a. Refers to any work not involving sources of ignition, such as cleaning a vessel or tank.
4) Permit to Open:
   a. Grants permission to open a vessel or tank, but not to enter.
5) Permit to Enter:
   a. Grants permission to enter.
6) Nature and Location of work:
   a. This section describes what kind of work is to be done, and the location the work is to be done in.
   b. This description will also include the particular piece of equipment or object to be entered or worked on.
7) Acceptable entry Conditions:
   a. This section identifies acceptable entry conditions.
8) Date:
   a. This identifies the day for which the permit is issued.
   b. Each permit is valid for the current shift.
   c. If the work cannot be completed in one day, a new permit must be issued for each additional day.
9) Time Permit Issued:
   a. This identifies the time the permit is issued.
   b. If the work is interrupted for more than two hours during the day, a new permit must be issued by the supervisor.
10) Time permit expires:
    a. This section identifies the time that the permit expires.
    b. If more time is needed to complete the work during the day, the expiration time must be extended and initialed by the supervisor or person in charge.
11) Employees Assigned:
   a. This section identifies all of the employees who will be involved in the work and the responsibility of each.

12) Hazards:
   a. This section describes the safety hazards associated with the work, such as oxygen deficiency, combustible gases or vapors, toxic gases or vapors, slippery bottom inside the tank, etc.

13) PPE, precautions and measures to control or eliminate permit space hazard.
   a. This section identifies the pre-entry steps taken to prepare the space for entry.

14) Tests conducted:
   a. Any person involved in the confined entry procedure has the right to witness the testing, and/or be furnished the results if requested.
   b. This section documents the testing of the atmosphere within the confined space.
   c. Each test that was conducted is identified by recording the time that each test was performed, and as the results of each test.
   d. Additional spaces are provided for retesting of the atmosphere during the work period.

15) Testing Equipment Used:
   a. This section identifies the type of equipment that was used to test the atmosphere inside the confined space, or atmosphere of the work area.
   b. The serial number and date of calibration of each testing device must also be recorded.
   c. If the testing device does not require calibration, N/A will appear in the calibration column.

16) Signature of Tester(s):
   a. The person(s) who performed the testing procedure must sign their name(s) in this space.
   b. The Entry Supervisor in charge has been assigned the responsibility of performing these tests.
   c. In the event he is not qualified, or does not have the required equipment to conduct these tests, a contract Safety Company may be used.
   d. In most cases the client will perform this function.

17) Rescue Services:
   a. This section identifies the Rescue Service and lists their phone number.
   b. The means of summoning the Rescue and Emergency Services is to be listed.
   c. The type of rescue equipment is to be listed.

18) Communication Equipment:
   a. This section identifies the type of communication equipment that will be used by the authorized entrants and attendants to maintain contact during entry.

19) Alarm Systems:
   a. This section identifies the types of alarms to be used.

20) Fire Precautions:
   a. This section describes the precautions that have been taken to protect against fire or explosion.

21) Signature of Attendant:
a. The person(s) who is the designated hole watch must sign his name(s) in this space.
b. Signatures must appear on both copies of the permit.
c. Signatures of Authorized Entrant(s):
   i. The person(s) responsible for doing the work within the confined space must sign in this space.
   ii. This signature acknowledges that the person(s) is aware of, and understands the information contained on this permit.
   iii. Signatures must appear on both copies of the permit.

22) Signature of the Entry Supervisor:
   a. Once the supervisor is confident that all the necessary pre-entry steps have been taken, he/she signs the permit.
   b. This permit will not be valid unless the supervisor's signature is on both copies of the permit.

23) Remarks:
   a. Additional space is provided for any instructions or additional information that the supervisor feels is necessary to ensure a Safe Entry into, and work within, the confined space.
   b. The company person in charge will make sure all employees understand any and all information contained in this section.
   c. If additional space is needed for signatures and positions assigned, a roster may be attached or the back of the permit to be used.

Handling of the Permit:
   1) Both copies must be completed, reviewed, and signed.
   2) One copy is to be left at the work site in an accessible location on, or near, the entrance or man-way which will be the main means of access or egress of the project.
   3) After the work has been completed, this copy shall be removed.
   4) The other copy is to be given to the client's representative, or kept at the home office as a record of the work performed.
   5) The other copy is to be kept in the office for one year, as a record to show that the work was completed properly.

In the event that Linear Controls, Inc. makes any confined space entry, the program shall be reviewed using the canceled permits within one (1) year after each entry and revise the program as necessary to ensure employees are protected. If no entries are performed during a twelve (12) month period, no review shall be necessary.

Management may perform a single annual review covering all entries performed during a twelve (12) month period.

Communications

A reliable system of communication must be established such as handheld radios or hand signals.

All personnel involved in confined entry operations must understand, and be able to use, the communication system that was selected.
Safe entry into, and work within, a confined space depends on how well the pre-entry procedures are completed.

Confined Space Entry

After all the pre-entry steps have been declared safe for entry, personnel may enter the space to begin the work. The following procedure must be followed to ensure a safe entry:

The Entry Supervisor will conduct a safety meeting, and these items reviewed each time an entry is to be made.

Put on the required protective clothing.

This may include items such as:

1) Protective suits
2) Goggles or face shields
3) Hard hats
4) Gloves
5) Safety shoes
6) Hearing protection
   a. Depending on the type of work being performed.

Put on the required respiratory protection.

- If testing of the atmosphere within the space indicates an oxygen deficiency, approved respirators must be worn by all personnel who enter the space.

Obtain the proper fire protection.

- The possibility of fire requires that fire extinguishers be placed at the openings of the confined space.

Use Attendant.

- At least one attendant must stand by on the outside of the confined space, ready to give assistance in case of an emergency.
- The attendant(s) must have proper personal protection equipment and respiratory protection available for immediate use, and be trained in the proper use of the equipment.
- The standby person(s) may pass tools to the worker(s) in the work space.

Use additional personnel.

- At least one additional employee must be within sight or calling distance of the stand by person.

Enter the Confined Space:

Depending upon the design of the space being entered, personnel may have to make a side or top entry.
Side entry:

- Tanks, vessels, or other confined spaces with side and top openings, are to be entered from the side if possible.
- Side openings are those within 3.5 feet of a firm footing or landing.
- Approved safety harness and lifeline harness with attached life line, must be worn by all persons entering the confined space.
- The free end of the line must be attached to a mechanical extraction device located outside the enclosure, or secured to a fixed object outside the entry opening.

When entry must be made from the top of the tank, vessel, or other confined space, the precautions identified for side entry must be taken along with the following:

1) Use a hoisting device.
   a. A hoisting device must be used for lowering and lifting personnel, especially the injured, out of the space.

2) Use a ladder.
   a. When available, a ladder should be used for entry into, and exit from, the space.

When performing the work within the confined space, there are specific precautions that must be taken to avoid injury.

1) Work involving the use of flame, arc, spark, or other source of ignition, is to be performed only in a gas-free atmosphere.
2) If nitrogen or other inert gases are used to provide protection against ignition, or as a welding blanket gas, a breathing device must be worn at all times when inside the confined space.
3) All electrical tools must be grounded.
4) All lighting equipment must be operated at a maximum of 12 volts and must be explosion proof.
5) All connections will be made outside of the confined space, and will remain outside the confined space.

Multi-Employer Operations

The host client shall develop and implement procedures to coordinate entry operations when employees of more than one employer are working simultaneously as authorized entrants in a permit space, so that employees of one employer do not endanger the employees of any other employer.

Confined Space Post Entry

After work within the confined space has been completed, the proper steps to restore the work space to its original condition must be performed:

1) Inspect the interior for any tools, nuts, bolts, etc., before cleaning up the inside space.
2) Remove and store all ventilating devices. (i.e. fans or blowers.)
3) Before closing, clean out openings, hatches, doors, manhole covers, etc., and make sure all personnel are out of the confined space.
4) Close all clean out openings, hatches, doors, and manhole covers, etc.
5) Remove any blind flanges or "Pancakes".

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6) Connect any flow line piping that was disconnected to isolate the confined space.
7) Close all drain line valves, open all inlet and outlet valves on the vessel, according to the requirements of the operation mode.
8) Activate any automatic fire suppression systems.
9) Remove all tag and lockout devices from electrical equipment, and restore power to the equipment.
10) Inform client that the work is complete.
11) Remove the entry permit.
12) Properly store all tools and safety equipment.
13) Clean area around confined entry space.
14) The work within the confined space area is not complete, until the work area has been restored to its original condition.

**Emergency Rescue Services Personnel**

In most cases the client will provide the Rescue and Emergency Services for permit entry operations.

The Entry Supervisor will ensure that the all rescue personnel are provided with, and are trained to use, personal protective equipment necessary for making rescues.

Any personnel, who are assigned the responsibility of entering permit spaces to conducting rescue and emergency services, must meet the following requirements:

1) Each member of the rescue service will be trained to perform assigned rescue duties.
2) They will also receive the training required of authorized entrants under this plan.
3) Will be trained in First Aid/CPR.
4) Each member of the rescue service will practice making rescues at least once every 12 months.

Linear Controls, Inc. will always arrange to have persons other than its own employees on site to perform rescues for IDLH entries and they will:

1) Inform the rescue service of the hazards they may confront when called on to perform a rescue.
   a. The rescue service must be given an opportunity to examine the site review, practice rescue, and decline as appropriate.
2) They must accept responsibility to perform these services.
3) If there is reliance on the client Host rescue service for use, this must be stated and agreed to in contract language.
4) Provide the rescue service, with access to all permit spaces from which rescue may be necessary, to allow them to develop rescue plans and practice rescues.

Employees must have PPE at no cost, training, and practice rescues at least every 12 months.

**Training Requirements**

Each affected employee must be trained prior to initial assignment, prior to a change in assigned duties, if a new hazard has been created or special deviations have occurred.
Management shall certify that all required training has been completed by issuing cards and certificates.

The certification must be made available to employees and their authorized representative.

The certification shall include:
1) The employee's name
2) The signature/initials of the trainer
3) Date(s) of the training

Definitions

**Confined Space** is any space that is not intended for continuous human occupancy, but is large enough and so configured that an employee can bodily enter and perform assigned work.

- Confined spaces can have limited access and/or egress. The location and/or size of openings inhibit the removal of an unconscious or injured employee.

**Engulfment** is the immersing or burying of a person by a liquid, or a solid, such as sand or grain.

**Entrapment** is the trapping and possible asphyxiation of a person due to the internal configuration of a space.

**Entry** is when any part of a person’s body crosses the plane of an opening to a confined space.

**Hazardous atmosphere** is an atmosphere that can be injurious to entrants.

- Examples of hazardous atmospheres include:
  - Oxygen deficient atmospheres; below 19.5% can be fatal.
  - Atmospheres containing a flammable gas, vapor, or mist in a concentration that is greater than 10% of its Lower Flammable Limit.
  - Atmospheres that contain a combustible dust in excess of its Lower Flammable Limit, or a dust that obscures the vision at a distance of five feet or less.
  - Atmospheres containing air contaminant concentrations above governmentally regulated or generally accepted workplace exposure limits.
  - Atmospheres containing air contaminant concentrations that are immediately dangerous to life or health (IDLH).

**Hazardous confined space** is a confined space that has one or more of the following characteristics:
- Contains, or has a potential to contain, a hazardous atmosphere.
- Contains a material that has the potential for engulfment.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or by a floor that slopes downward and tapers to a small cross-section.
- Contains any other recognized serious safety or health hazards.
**Immediately Dangerous to Life or Health (IDLH)** is any condition that poses an immediate or delayed threat to life, or that would cause irreversible adverse health effects, or that would interfere with an individual’s ability to escape unaided from a permit space.

**Lower Explosive Limit** is the minimum concentration at which a substance can ignite.

**Oxygen deficient atmosphere** is an atmosphere that contains less than 19.5% oxygen by volume.

**Oxygen enriched atmosphere** is an atmosphere that contains more than 23.5% oxygen by volume.

**Qualified Entrant** is a person who by reason of training, education and experience is knowledgeable in confined space entry operations, and is competent to judge and complete tests for the hazards involved.

- An individual who has completed confined space entry training and has been authorized by corporate safety as a qualified entrant.
26. RESPIRATORY PROTECTION PLAN

Purpose

The purpose of this procedure is to provide guidance for employees who may perform work that requires the use of respiratory protection including emergency escape packs and comply with OSHA 29 CFR 1910.134.

Scope

This procedure is intended to addresses respirator selection criteria, requirements for inspection, maintenance and repair, and storage of respiratory protection.

Respirator protection training, medical evaluations, and fit testing must be completed to qualify an employee to wear a respirator.

Any employee required to wear a respirator must comply with the provisions of this procedure.

Responsibilities

The Safety Coordinator has been named as the Respiratory Protection Program Administrator for Linear Controls, Inc.

The Safety Coordinator is qualified by appropriate training and experience to understand and implement all facets of the Respiratory Program.

Company personnel are responsible for using the correct respirator for the job as required by this procedure.

Additional responsibilities include:
1) Maintaining, inspecting, cleaning, and storing respiratory protection equipment as described in this procedure.
2) Undergoing medical evaluations initially and annually when assigned to a job that requires the use of a respirator including an emergency respirator.
   a. Employees must be medically qualified to wear a respirator prior to fit testing.
3) Undergoing fit testing prior to assignment to a job that requires the use of a tight fitting respirator.
4) Immediately report any defects in the respiratory protection equipment.
5) Immediately evacuate to a safe area and report the problem whenever there is a respirator malfunction.
6) Promptly report to the Safety Coordinator any symptoms of illness that may be related to respirator usage or exposure to hazardous atmospheres.
7) Report any health concerns related to respirator use or changes in health status to the Safety Coordinator.
8) Store respirators in accordance with instructions received.
9) Observe any restrictions placed on work activities by the Safety Coordinator.
10) Be clean shaven in all facial areas that seal to the respirator face piece.
11) Allow no headpieces, band-aids, or other items beneath a respirator seal or head-strap assembly.
12) Inspect the respirator immediately before each use, in accordance with training provided.
13) Perform a user seal, negative and positive respirator fit check, each time a respirator is donned in accordance with training provided.

Procedure

The Program Administrator is responsible to ensure that each respirator user under his supervision is currently approved for respirator use, including medical, fit testing, and training certifications.

Employees with expired certifications shall not be permitted to work in hazardous atmospheres, or to voluntarily wear a respirator until their lapsed requirements are updated.

Regular inspections will be conducted while each project is being worked on and any deficiencies will be corrected. This will ensure that employee compliance with the respirator program requirements is monitored.

Respirators are provided to all employees when such equipment is necessary to protect the health of the employee.

Employee exposure will be monitored upon initial work in a potentially hazardous atmosphere, and whenever work conditions change that may affect employee exposure.

Any defective respirators or parts are removed from service and tagged out.

This equipment will be repaired or replaced in a timely manner.

Maintenance and repairs of respiratory protection equipment are performed in accordance with the manufacturer’s instructions.

The proper the type of respirators and equipment are issued to conform to the respirator plan or program.

Any complaints related to respirator use are promptly investigated and recorded, and any hazards corrected. Medicals, respirators, and training are provided free to the employee.

Engineering Controls

Proper PPE and respiratory equipment will be issued to the employees to use against harmful fumes, mists, gases, smokes, sprays, vapors, or oxygen deficient atmospheres when conditions are temporary, engineering control measures are not feasible or completely effective, during emergencies situations with high exposure, or while engineering controls are being instituted.

- This equipment shall be and used by each effected employee.
- The primary objective shall be to prevent atmospheric contamination.
• This shall be accomplished as far as feasible by accepted engineering control measures.
  o For example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials.

When these hazardous atmospheres are recognized, elimination of hazardous material or feasible engineering and work practice controls shall be instituted to reduce contaminant levels to within allowable limits.

Respirators shall be issued by the Program Administrator and worn by exposed employees whenever airborne contamination levels are not otherwise reduced to within the allowable limits.

Respirators will be provided by Linear Controls, Inc. at no cost to the employee where engineering controls do not reduce atmospheric contamination to acceptable levels for:
  1) Maintenance
  2) Operations
  3) Spills
  4) Leaks
  5) Fires, explosions
  6) Other emergencies.

Management shall provide the respirators which are applicable and suitable for the purpose intended.

Management shall provide the respirators, training, and medicals at no cost to the employee.

Breathing Air Quality and Use

Linear Controls, Inc. will provide employees using atmosphere-supplying respirators (supplied-air and SCBA) with only D quality breathing air.

Management will ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:
  1) Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen.
  2) Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
     a. Oxygen content (v/v) of 19.5-23.5%
     b. Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less
     c. Carbon monoxide (CO) content of 10 ppm or less
     d. Carbon dioxide content of 1,000 ppm or less
     e. Lack of noticeable odor.

Program Evaluation

The Program Administrator will periodically assess the effectiveness of this program and:
1) Conduct evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented.

2) Conduct evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

3) Regularly consult employees required to use respirators to assess the employees’ views on program effectiveness and to identify any problems.
   a. Any problems that are identified during this assessment shall be corrected.
   b. Employees must be asked about factors used to assess the program, which include, but are not limited to:
      i. Respirator fit (including the ability to use the respirator without interfering with effective workplace performance).
      ii. Appropriate respirator selection for the hazards to which the employee is exposed.
      iii. Proper respirator use under the workplace conditions the employee encounters.

4) Proper respirator maintenance.

The program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use.

**Hazardous Atmospheers**

Company personnel must familiar with work environments that require the use of respiratory protection.

**Oxygen Deficient Atmospheres**

When assessing an atmosphere it is important to understand that an oxygen deficient atmosphere can be caused by displacement of air by other gases and vapors, or by means of oxidation processes, such as fires, rusting, and aerobic bacteria, where the oxygen is consumed.

**Immediately Dangerous to Life or Health (IDLH) Atmospheres**

IDLH atmospheres can include oxygen deficient atmospheres, but also include atmospheres that contain certain contaminants in their IDLH concentrations.

IDLH atmospheres can include chemical asphyxiants, such as carbon monoxide or hydrogen sulfide.

These can be life threatening even though there is adequate oxygen, because they interfere with the body’s ability to absorb the oxygen in the air.

**Non-Compliant Atmospheres**

Atmospheres where contaminant concentrations exceed work place exposure limits.
Selection and Issuance of Respirators

Selection of the proper type of respirator is critical for maximum protection.

Employees are not to wear respirators with tight-fitting face pieces if the seal is broken between the sealing surface of the face piece and their skin because of facial hair, glasses or any condition that interferes with the face-to-face piece seal.

The Safety Coordinator will conduct exposure assessments as necessary to identify hazards, select, and provide respirators based on the potential exposure hazards that affect performance of the employees at the worksite.

The respirator shall be used in compliance with the conditions of its certification.

Various types of respirators have their own intended purpose and limitations.

- No single respirator is appropriate for all jobs.

There are two basic types of respiratory protection devices:

1) Air Purifying
2) Air Supplied

Air Purifying Respirators

Air purifying type respirators rely on a mechanical filtering device (cartridge or canister) to clean contaminants from the air.

Each cartridge or canister will work only for certain types of contaminants. If the air purifying respirator is to be used for protection against particulates (dusts, fumes, mists, fog, or smoke) then a HEPA filter would be required.

All filters, cartridges, and canisters must be color coded with the regulatory approval label.

Identification of Filters, Cartridges, and Canisters

Management will ensure that all filters, cartridges, and canisters used in the workplace are labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible.

Multipurpose combination cartridges are also available and are color coded to protect against multiple contaminants with low combined concentrations.

Air purifying respirators do not supply oxygen; therefore, they cannot be used in an oxygen deficient atmosphere.

Proper fit is imperative with negative pressure type respirators, since there is the potential for contaminants to be drawn into the face-piece through openings in the face to face-piece seal.

Employees should do a fit check on tight-fitting respirators to ensure they have properly donned the respirator.
Employees must be fit tested on the same tight-fitting respirator (name brand, size, and product number) that they will be using prior to use.

The concentration of the contaminant must be assessed to ensure proper selection.

**Atmospheres That Are Not IDLH**

Management will provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.

The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

For protection against gases and vapors Linear Controls, Inc. will provide:

1) An atmosphere-supplying respirator
2) An air-purifying respirator, provided that his/her respirator is equipped with an end-of-service-life indicator (ESL) certified by NIOSH for the contaminant.

If there is no ESL appropriate for conditions in the workplace, Management will implement a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life.

For protection against particulates Linear Controls, Inc. will provide:

1) An atmosphere-supplying respirator
2) An air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR part 11, as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR part 84.

For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.

If the atmosphere is uncharacterized, it must be assumed to be IDLH and a positive pressure SCBA or combination supplied-air respirator with SCBA must be worn.

Respirator selection shall comply with OSHA requirements for specific substances, such as asbestos, lead, etc.

**Air Supplying Respirators**

Air supplied respirators provide clean breathing quality air.

Breathing quality air must meet Grade D requirements.

Air supplied respirators can be used in IDLH atmospheres provided that they are:

1) A NIOSH approved SCBA pressure demand or SAR type respirator with a 30 minute bottle.
2) An airline respirator in conjunction with a five minute escape bottle that is carried on the person.

3) An escape respirator that is hooded and is attached to a supplied air bottle which is carried by the person.

Air supplied respirators can be used for atmospheres that are not IDLH.

They are required for atmospheres containing gases or vapors when the criteria for selecting and using an air and the basis for reliance on the data.

**Respirators for IDLH Atmospheres**

Respirators provided only for escape from IDLH atmospheres will be NIOSH-certified for escape from the atmosphere in which they will be used.

Management will provide the following respirators for employee use in IDLH atmospheres:

1) A full face-piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes.

2) A combination full face-piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

Respiratory protective devices provided by the company must meet regulatory approval and must bear a NIOSH approval number.

No components shall be substitutes unless they are approved by NIOSH.

Any changes or modifications to a respirator may void the respirator approval and may adversely affect its performance.

Any restrictions or limitations recommended for a particular respirator by the respirator manufacturer shall be observed.

Individuals who wear corrective lenses and are required to wear a full face respirator may need to have permanently mounted lenses installed into the face-piece.

Regardless of exposure level, employees who are exposed to any recognized carcinogen, mutagen, or teratogen in the performance of their work assignments may request and receive an appropriate respirator for voluntary use.

Affected employees already assigned a respirator may request a respirator that provides a higher protection factor than the one provided by Management for that work.

No employee may work alone while wearing a respirator.

Each respirator wearer shall have at least one employee assigned responsibility to perform periodic status checks throughout the duration of respirator use.

When SCBA’s are worn, at least one standby person, located outside the hazardous atmosphere and equipped with an SCBA, shall be in constant attendance, ready to provide immediate assistance and to call for emergency help, if needed.
Protection Factor

The National Institute for Occupational Safety and Health, or NIOSH, and the Mine Safety and Health Association, MSHA, are the two bodies that certify respiratory protective equipment.

Never use respiratory protective equipment that does not have a NIOSH/MSHA certification number.

Respirator Inspections

All respirators used in routine situations shall be inspected before each use and during cleaning.

All self-contained breathing apparatus shall be inspected at least monthly.

All respirators maintained for use in emergency situations shall be inspected at least monthly, in accordance with the manufacturer’s recommendations, and shall be checked for proper function before and after each use.

Emergency escape-only respirators shall be inspected before being carried into the workplace.

Repairs and Maintenance

A respirator will only provide protection if it is properly maintained with all components in good working order.

Management will ensure that respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:

1) The Program Administrator will be responsible for the maintenance and repair of respirators.
   a. All respirators needing repairs will be sent to a certified third party shop for repair.
2) Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator.
3) Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.
4) Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.
5) Employees who are issued a respirator are responsible for its maintenance, daily inspection, and storage while the unit is in their control.
6) Air and oxygen cylinders will be maintained in a fully charged state, and will be recharged when the pressure falls to 90% of the manufacturer’s recommended pressure level.

Respirator Cleaning and Disinfecting

Management will ensure that respirators are cleaned and disinfected using the procedures specified by OSHA, or procedures recommended by the respirator manufacturer, provided that such procedures are of equivalent effectiveness.

The respirators shall be cleaned and disinfected at the following intervals:

1) Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.
2) Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals.
3) Respirators maintained for emergency use shall be cleaned and disinfected after each use.
4) Respirators used in fit testing and training shall be cleaned and disinfected after each use.
5) Respirators that are shared must be cleaned and disinfected after each use.
6) When the respirator is individually assigned, the respirator must be cleaned and disinfected as often as necessary to keep it in sanitary condition.
7) Alcohol wipes should not be used because they can damage the rubber and plastic components.
8) Respirators should be disassembled and all components washed in warm water with a mild detergent.
9) When the cleaner used does not contain a disinfecting agent, use a solution that contains one milliliter of laundry bleach to one liter of water or about 0.8 milliliters of tincture of iodine to one liter of water.
10) All components should be rinsed and dried.

Respirator Storage

Management will ensure that respirators are stored as follows:

1) All respirators shall be packed or stored to protect them from:
   a. Damage
   b. Contamination
   c. Dust
   d. Sunlight
   e. Extreme temperatures
   f. Excessive moisture
   g. Damaging chemicals
2) To prevent deformation of the face-piece and exhalation valve.

Medical Evaluations
Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee.

Company personnel will be medically evaluated and qualified to determine whether the employee is physically able to wear a respirator prior to being fit tested and being assigned to wear a respirator.

The medical questionnaire and examinations will be administered confidentially during the employee’s normal working hours or at a time and place convenient to the employee.

Medical records created under this program shall be handled in accordance with OSHA requirements for confidential employee access and retention.

Linear Controls, Inc. approved medical evaluation, respirator, and respirator training shall be paid for by the company.

Linear Controls, Inc. will provide the employee with an opportunity to discuss the questionnaire and examination results with the physician.

The medical questionnaire will be administered in a manner that ensures that the employee understands its content.

The medical evaluation may be discontinued once the individual is no longer required to wear a respirator.

**Fit Testing**

A fit test is a procedure that determines either qualitatively or quantitatively that a respirator fits the person.

Each respirator wearer shall be qualitative fit tested (QLFT) or quantitative fit tested (QNFT) as per OSHA Standards before the initial use of a respirator with a tight fitting face-piece.

The respirator wearer will be fit tested annually using OSHA approved protocols as approved by the Program Administrator.

The employee must be fit tested with the same make, model, style, and size of respirator that will be used.

The employee will be fit tested any time he is required to use a different type of respirator. More frequent testing shall be performed if required by OSHA regulations for specific substances or if the wearer’s facial contours change, such as by weight gain or loss, facial surgery, etc.

Management will ensure that employees using a tight-fitting face-piece respirator pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT).

In most cases the fit testing will be done by a qualified third party.
The employee will be fit tested prior to initial use of the respirator, whenever a different respirator face-piece (size, style, model or make) is used, and at least annually thereafter.

The fit test shall be administered using an OSHA-accepted OLFT or QNFT protocol.

The OSHA-accepted QLFT and QNFT protocols and procedures are contained in Appendix D of 29 CFR 1910.134.

Fit test certifications shall be prepared and signed by the person performing the fit test and must name:
   1) The tested employee.
   2) The make, model, and size of the respirator fit tested.
   3) The result of the fit test.

A copy shall be provided to the Program Administrator.

SAR type respirators are required to be fit tested as well.

**Fit Checks**

A fit check is a method by which the employee ascertains that they have correctly donned their respirator.

Fit checks must be performed each time an employee dons a tight-fitting respirator.

A fit check can be completed using the following procedure:
   1) Don the respirator and tighten the straps until you feel you have a snug fit.
   2) Conduct a negative pressure check.
   3) Unscrew the cartridges and cover the inhalation ports with the palms of your hands and breathe in.
   4) For canister respirators, either cover the inhalation port on the canister or disconnect the canister and cover the inhalation port into the mask.
      a. The respirator should collapse against your face.
   5) Conduct a positive pressure check.
      a. Cover the exhalation valve and breathe out. The respirator should fill, but should not lift off your face.
   6) If any of the fit check steps fail, readjust the straps and try again.
   7) If you still cannot pass a fit check, then you need a different face-piece.

**Monitoring Continuing Respirator Effectiveness**

The Program Administrator shall maintain appropriate surveillance of all respirators, of work area conditions and degree of employee exposure or stress.

When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, the Program Administrator will re-evaluate the continued effectiveness of the respirator.

Management will ensure that employees leave the respirator use area:
1) To wash their faces and respirator face-pieces as necessary to prevent eye or skin irritation associated with respirator use.
2) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face-piece.
3) To replace the respirator or the filter, cartridge, or canister elements.
4) If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face-piece, Management will replace or repair the respirator before allowing the employee to return to the work area.

Recordkeeping

Safety Coordinator will retain written information and certification regarding:
1) Training.
2) Medical evaluations.
   a. Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020.
3) Fit testing.
   a. The Safety Coordinator shall establish and maintain a record of the qualitative and quantitative fit tests administered to an employee.

This information will be kept at the home office.

Training Requirements

Management will provide effective training to employees who are required to use respirators to accomplish their work assignments and protect them in case of an emergency situation to which they may potentially be exposed.

The training will be comprehensive and understandable and may be conducted by the Safety Coordinator or contracted to a professional safety training company.

The training will ensure that each employee can demonstrate knowledge of at least the following:
1) Respirators and why the respirator is necessary.
2) How improper fit usage, or maintenance, can compromise the protective effect of the respirator.
3) What the limitations and capabilities of the respirator are.
4) How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.
5) Proper use of an emergency escape air pack emergency situation.
6) In respirator use how to:
   a. Fit
   b. Inspect
   c. Don
   d. Doff
   e. Use
   f. Do fit checks
   g. Wear
7) What the procedures are for maintenance and storage of the respirator.
8) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.
10) Contents of this procedure.

Training Frequency

This training will be provided prior to requiring the employee to use a respirator in the workplace.

Retraining shall be administered annually, and when the following situations occur:

1) Changes in the workplace or the type of respirator render previous training obsolete.
2) Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill.
3) Any other situation arises in which retraining appears necessary to ensure safe respirator use.

If Management is able to demonstrate that a new employee has received training within the last 12 months that addresses the elements listed above, the employee will not be required to repeat such training.

Definitions

Airline Respirator is a supplied air respirator where the air is supplied from a remote source and is not carried on the person.

Air-purifying respirator means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned protection factor is the level of respiratory protection expected to be provided by a given class of respirators to a properly fitted and trained user. This factor is assigned by OSHA in substance specific standards and by ANSI in the voluntary national standard, Z88.2

Atmosphere-supplying respirator means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SAR’s) and self-contained breathing apparatus (SCBA) units.

Canister or cartridge means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Demand respirator means an atmosphere-supplying respirator that admits breathing air to the face-piece only when a negative pressure is created inside the face-piece by inhalation.
Emergency situation means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-service-life indicator (ESLI) means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Escape-only respirator means a respirator intended to be used only for emergency exit.

Filter or air purifying element means a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering face-piece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the face-piece or with the entire face-piece composed of the filtering medium.

Fit factor means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative Fit Test QLFT and Quantitative Fit Test QNFT.)

Grade D Breathing Air. Air that meets the requirements for Type 1-Grade D breathing air as described in the ANSI/Compressed Gas Association Commodity Specifications for Air.

High efficiency particulate air (HEPA) filter means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter.

Immediately dangerous to life or health (IDLH) means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Negative pressure respirator (tight fitting) means a respirator in which the air pressure inside the face-piece is negative during inhalation, with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere means an atmosphere with an oxygen content below 19.5% by volume.

Positive pressure respirator means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
Qualitative fit test (QLFT) means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT) means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Self-contained breathing apparatus (SCBA) means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user. Service life means the period of time that a respirator, filter, sorbent, or other respiratory equipment provides adequate protection to the wearer.

Supplied-air respirator (SAR) or airline respirator means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-fitting face-piece means a respiratory inlet covering that forms a complete seal with the face.

User seal check means an action conducted by the respirator user to determine if the respirator is properly seated to the face.
27. HYDROGEN SULFIDE SAFETY

Purpose

Linear Controls, Inc. is committed to protect the health and well being of all of its employees. The purpose of this procedure is to provide guidance for company personnel who might be subject to perform work at locations that contain Hydrogen Sulfide (H2S) and help the company comply with OSHA 29 CFR 1910.134 and 29 CFR 1910.1000.

Scope

This procedure applies to company personnel working at any worksite that might contain Hydrogen Sulfide.

Responsibilities

The Safety Coordinator is responsible for aiding in the implementation of this Procedure.

Company personnel are responsible for recognizing and anticipating all job hazards that could involve exposure to H2S, and complying with company and customer H2S procedures.

Procedure

Hydrogen Sulfide (H2S) is a highly toxic (Poisonous), colorless gas. It is formed by the decay of organic materials. It is found in natural oil and gas reservoirs, sewers and cesspools, or stagnant water such as swamps. It can also be produced in a variety of industrial processes.

H2S is one of the leading causes of sudden death in the workplace! No one is immune to H2S and no one can build up a tolerance for it. It is extremely toxic at relatively low concentrations; therefore even small amounts of this toxic gas can cause great physical damage.

Other names for H2S include:
- Sour Gas
- Stink Damp
- Sulfuretted Hydrogen
- Sour Crude
- Rotten Egg Gas
- Hydrosulfuric Acid
- Sulfur Hydride

Each employee should become familiar with these different names used to refer to Hydrogen Sulfide, so that he/she will always know what they are dealing with and be aware of the dangers involved in working around this toxic gas.
Sources of H2S

H2S can be located in many places throughout petroleum and gas processing facilities. It can be in crude oil, in the empty tank space above stored crude, or trapped in pockets in processing equipment.

Areas where H2S may be located include:
1) Tank batteries and adjoining producing fields, wells, etc.
2) Tank gauging (tanks at producing, pipeline and refining operations)
3) Field Maintenance
4) Gas wells and lines
5) Gas compressor stations
6) Gas treating and processing plants
7) Sites that use landfill gas as turbine fuel
8) Drilling operations
9) Recycled drilling mud
10) Offshore production platforms
11) Blowouts
12) De-gassing vessels and flues
13) Water from sour crude wells

Petroleum industry facilities are not the only source of hydrogen sulfide. H2S may also be found in the following locations:
1) Landfills
2) Sewer systems and waste water treatment facilities
3) Agricultural areas
4) Volcanic gases and sulfur springs
5) Swamps
6) Underground pits and passages
7) Mining operations
8) Public Utilities

Chemical and Physical Properties of H2S

Hydrogen Sulfide has many varied characteristics. A thorough knowledge of the hazards associated with H2S, and proper planning will ensure confidence and safety while working in areas containing H2S.

Toxicity - H2S is a highly toxic (poisonous) gas which is deadly to humans and animals.
- When exposed to high concentrations, it will cause death in a very short period of time.

Color - H2S has no visible color, therefore when it is released into work areas it cannot be seen.
- It has been given the name "Silent Killer".

Odor - At low concentrations, H2S has an offensive odor.
- Many times the odor is described as a "rotten-egg smell".
- It often smells differently to various individuals, and sometimes is described as a sweet, sickening odor.
• This offensive odor indicates the presence of H2S, but does not indicate the level of concentration present.
  o This is because the sense of smell is deadened at higher concentrations, by the poisoning of the cells in the mouth and nose that detect odors.
  o The odor of H2S then becomes tolerable or seems to disappear leading to a false sense of security.

Solubility - H2S is soluble in water and hydrocarbons, that is, H2S will absorb into most liquids.

Corrosiveness - H2S is highly corrosive to certain metals.
• This is because it readily combines with water (H2O) to form H2SO3, (Sulfuric acid) which is a very strong acid.
• Valves, piping, and refinery process equipment suffer extreme corrosion damage due to the presence of water and H2S combined.

Specific gravity - H2S specific gravity is 1.2, (specific gravity of air = 1.0).
• This makes H2S 20% heavier than air.
• It can be dispersed great distances with only a slight breeze.
• Because of its weight, H2S will tend to collect in low lying areas such as pits, ditches, cellars, or other poorly ventilated areas.
• H2S will also collect at the bottom of tanks and vessels,

Flammability - H2S is very flammable when mixed with air.
• The LEL or lower explosive limit is 4.0%.
• The UEL or upper explosive limit is 44.0%.
• At concentrations in free air between the upper and lower explosive limits, an explosive mixture is present.
• All that is required to produce an explosion or fire is an ignition source.
• H2S has an ignition temperature of only 500°F.
• Examples of ignition sources are static electricity, burning cigarettes, electric arcs, sparking, welding operations, etc.

Toxic by-products - When ignited, H2S produces Sulfur Dioxide (SO2). SO2 is extremely hazardous when inhaled and may leave victims disabled with pneumonia and respiratory damage.
• All personnel should be instructed to stay away from flare stacks and burning pits when H2S is flared or ignited.

Routes of Exposure to H2S

The three common routes of entry into the human body that are encountered are:
1) Inhalation through the respiratory system.
2) Contact with the eyes, nose, or throat.
3) Contact with the skin.

Health Effects

The greatest danger of H2S is death by inhalation. However, H2S contact with eyes or skin can also produce painful irritations.
When H2S has been inhaled, it travels directly through the lungs and into the bloodstream.

In an effort to protect itself, the body breaks down or oxidizes the H2S as quickly as possible into a harmless compound.

In excess quantities, the body cannot oxidize it all.

H2S builds up in the bloodstream and poisoning takes place.

H2S poisoning affects the nerve centers in the brain, which control breathing causing paralysis of that system.

The lungs stop working and the person suffocates.

H2S contact with eyes or skin can also produce painful irritations.

The target organs are the eyes, the respiratory system, and the central nervous system.

The health effects of exposure to H2S vary depending on the concentration.

Hydrogen Sulfide in the blood is detoxified rapidly, and symptoms of poisoning may disappear when inhalation of the gas ceases. The effects that H2S has on the individual will depend on the following factors:

1) Duration - The length of time the individual is exposed.
2) Frequency - How often the individual is exposed.
3) Intensity - How much exposure to high concentrations the individual has received.
4) Sensitivity - Symptoms will vary depending upon how sensitive each individual is to H2S.
5) Special Health Problems - Special health problems can increase the effect of H2S in individuals.
   a. Individuals who have special health problems are at greater risk, and their exposure to H2S should be minimized or avoided.
   b. Some of these special health problems are:
      i. Punctured ear drum (May allow the passage of air through the ear and into the respiratory tract).
      ii. Emphysema.
      iii. Asthma.
      iv. Diabetes.
      v. Epilepsy.
      vi. Eye infections.
      vii. Anemia.
      viii. Alcoholism or consumption of alcohol within the past 24 hours.

Symptoms of Exposure

Personnel exposed to H2S may display all or part of the following symptoms:
1) Poisoning by Inhalation:
   a. Inability or difficulty in breathing.
   b. Coughing.
c. Dizziness.
d. Dryness in the nose and throat.
e. Fatigue.
f. Headache.
g. Irrational behavior.
h. Loss of appetite / upset stomach.
i. Loss of consciousness.
j. Nausea.
k. Loss of smell.
l. Lung damage.
m. Coma.
n. Death.

2) Contact with eyes:
   a. Pain or burning sensation in eyes.
   b. Blurred vision.
   c. Painful secretion of tears.
   d. Contact lenses can contribute to eye irritation.
   e. Tissue damage / eye disease.

3) Contact with skin:
   a. Skin discoloration.
   b. Skin irritation, (H2S combines with perspiration).

These symptoms may take hours to develop or may appear in seconds if the concentration of H2S is extreme.

- If an individual notices any of these symptoms, seek medical attention immediately.

Concentration Levels

Some individuals are more sensitive to H2S and will be affected by smaller concentrations. Others may be less sensitive and can withstand greater concentration levels without adverse effects.

High concentrations of H2S, especially those capable of causing serious health effects, cannot be detected by the sense of smell.

- The sense of smell is “overwhelmed” and becomes an unreliable means of detecting an odor.
  - However, to be safe, he should never assume that he/she can withstand large concentrations of the gas.

H2S concentration levels are measured in parts per million (PPM).

- This is a term that all employees should be familiar with and understand.
- PPM refers to the amount (parts) of H2S in a million parts of air.
  - Example: 10 ppm = 10 parts of H2S in a million parts of air.

Exposure Limits

The following limits have been established by the Standards Completion Program, and incorporate exposure limits set by the National Institute for Safety & Health (NIOSH), and the Occupational Safety and Health Administration, (OSHA).
1) IDLH - Immediately Dangerous to Life or Health = 100 ppm.
   a. Exposure to H2S at this level for just a minute or two can result in coma and death.

2) REL - Recommended Exposure Limit = 10 ppm, (NIOSH).
   a. This is a time weighted average for a 10-hour per day / 40-hour workweek exposure.

3) PEL – Permissible Exposure Limit = 20 ppm, (OSHA).
   a. PEL's are time weighted average concentration during an 8-hour day of a 40-hour workweek.
   b. This is the ceiling limit and should not be exceeded at any time!
   c. 50 ppm, 10-minute maximum peak, once if no other measurable exposure occurs, (OSHA).

Methods of Detection of H2S

Detection of hydrogen sulfide in the work place is essential to implementing an effective safety program. There are many ways that personnel can be alerted to the presence of H2S.

His/her nose is usually the first.
- You can smell as little as 1 ppm.
- If the concentration of gas is in the 100 - 150 ppm range, the sense of smell is quickly lost, giving a false sense of security.

Never rely on your sense of smell to detect concentration levels of H2S.

There are many types of test equipment in use to detect hydrogen sulfide.

The equipment may be a fixed location detector, or a portable detector attached to the clothing or carried by a shoulder strap.

Detectors are designed to measure the amount of H2S present in the atmosphere.

Detectors may function with special chemicals or with electronic sensors.

The most important concern with any H2S detector is the proper placement of the sensor units.
- Since H2S is heavier than air, it will settle in low areas.
- The portable units are usually attached to the clothing or carried and should be placed waist high.
- The electronic devices have portable sensor heads that should be placed in low areas.

Personal Gas Monitors

This type of detector consists of an electrochemical H2S sensor, a catalytic diffusion LEL sensor, an oxygen sensor, with a digital display contained in a light weight, battery operated portable unit.
These units are designed to be worn or carried by personnel that may be exposed to H2S in the work environment.

When H2S contacts the sensor, the sensor sends a signal to the controlling mechanism.

The controller receives the signal and provides a reading of the H2S concentration (in ppm) on the meter.

If the H2S concentration rises above the preset low level alarm of 10ppm, an alarm will sound.

If the concentration rises above 20 ppm, the high alarm level will sound continuously.

The alarm should always be tested before each use.

Follow the manufacturer's recommendations for testing the alarm.

**Fixed Detectors**

Fixed detectors are permanently installed, electrically operated, and provide continuous 24 hour protection.

They consist of a sensor head(s) which can be placed at various locations throughout a plant or platform, and are attached to a separate controller unit.

Calibration for both fixed and personal detectors on a regular basis is important to the H2S program.

Manufacturer's recommendations and specifications should be followed in the care, maintenance, calibration, and use.

**Methods of Protection from Exposure to H2S**

Engineering controls should be used to maintain H2S limits below the recommended exposure limit.

**Personal Protective Equipment**

The company Personal Protective Equipment procedure includes additional information on all PPE requirements.

Only NIOSH-certified self-contained breathing apparatus or airline respirator with escape SCBA should be used.
- The employee shall be trained in the use and care of the equipment.

**Emergency Escape Breathing Packs**
- Employees shall be provided a 10-minute emergency escape air pack.
- The employee shall be trained in the use and care of the equipment.

Customers shall provide rescue personnel and equipment.
Precautions

The following precautions must be taken in areas of possible exposure to H2S:

1) All personnel must be informed about the characteristics of H2S, its dangers, safety procedures to be used when it is encountered, and the rescue and first aid procedures.

2) Personal protective equipment and first-aid equipment must be available to all personnel.
   a. They must know the location of the equipment and be trained in the proper use of the equipment (this includes third party personnel).

3) Whenever H2S is suspected, a test must be made to determine its presence/concentration and a site specific work plan must be developed by the client, Field Representative, or other qualified individual.
   a. Do not attempt to determine the presence and concentration of H2S by its odor.
   b. The sense of smell is rapidly paralyzed by the gas.

4) Personnel must never be allowed to enter any area suspected to have dangerous levels (about 20 ppm) of H2S without a back-up person who is stationed outside of the hazardous area.
   a. Both must wear the proper respiratory protection.
   b. If the worker entering the hazardous area is more than an arm's length away from the back-up person, the worker must wear a safety belt secured to a lifeline and held by the back-up person.

5) When monitor alarms sound, employees shall vacate the area and not re-enter without proper respiratory protection.

6) Emergency Escape Air Packs
   a. Personnel shall keep a 10-minute emergency escape air pack within easy reach of their immediate work area when working in customer facilities where H2S is present.

7) Facial Hair
   a. All employees must be clean-shaven.
   b. In the event that a respirator is required, this allows positive sealing of the face plate.

8) Customer Emergency Plan
   a. As with all customer sites, it is imperative that all personnel are familiar with the local emergency procedures.
   b. Each time the customer site is entered, employees must ask the personnel in charge if there have been any changes to the emergency plan since training was last received.
      i. Employees must review the local site specific facility contingency plan prior to first entry into the plant, and as often as necessary to maintain a thorough understanding of emergency procedures.
   c. At least two escape routes must be marked, and the employee must be aware of them and the evacuation plans of all work locations.
   d. Assembly areas and alternates must be identified.
   e. Types of alarms and their sound must be understood.
   f. Emergency phone numbers, (ambulance, police, fire department, doctors, hospital, etc.), must be posted in visible and readily accessible locations.

9) Warning Signs
a. Warning signs shall be posted in readily visible locations at or near entrances to areas in which hydrogen sulfide is stored, handled, used, produced, or potential for release exists.

10) Fixed Alarm Systems
   a. Where fixed alarm systems for H2S are present, personnel must ensure that the alarm can be easily heard and recognized in the work area.

11) Portable Alarm Systems
   a. Familiarize them with the sound of the alarm system prior to beginning work.

12) Wind Socks, Streamers, or Vanes
   a. Devices that indicate wind direction must be located at strategic points throughout the facility, where there is a potential for a gas release.
   b. These must be visible from the work area.
   c. Personnel must observe wind direction prior to, and during, work in an area where H2S is potentially present.

Emergency Response & Rescue

A rescue attempt without the proper training and personal protective equipment can result in the rescuer also becoming a victim.

Employees who are not trained in H2S rescue techniques should not attempt an H2S rescue.

Any person attempting an H2S rescue (generally specially trained customer employee or fire department personnel) will only do so with the use of a Self Contained Breathing Apparatus (SCBA) or supplied air respirator.

Employees who are not trained on these devices should not attempt to use them or assist in any rescue efforts.

In the event that a fellow worker is overcome by H2S, quick reaction to the emergency situation is essential.

Before attempting any type of rescue, protect yourself first!

When attempting a rescue of someone overcome by H2S, use the following procedure:
   1) Call for help.
   2) Put on a respirator (if trained and medically qualified) while outside of the contaminated area. If you are inside of, or close to the contaminated area, hold your breath until you have put on a respirator.
   3) Move calmly, carefully, and quickly to the victim's side, and move the victim to a safe area upwind or crosswind of the hazardous areas.
   4) Do not evacuate the victim in a downwind direction.

Emergency Procedures

If presence of H2S is detected, or if an H2S alarm is activated, all employees must evacuate the area immediately, report to an upwind assembly point, and do not reenter without proper respiratory protection.
It is important for employees to be familiar with, and understand, the customer’s facility emergency plan prior to an actual emergency, so that appropriate actions can be taken.

Once notified of the presence of H2S in the work area, all personnel must immediately evacuate the area.

Training Requirements

All personnel, prior to any assignment to a location with H2S, will be trained on the following topics:

1) Description, formation, and sources of H2S.
2) Chemical & physical characteristics of H2S.
3) Sources of H2S.
4) Human physiology and medical evaluation
5) Concentration levels of H2S.
6) Exposure limits.
7) Routes of exposure.
8) Health effects of H2S.
9) Symptoms of exposure.
10) Methods for detection and monitoring of H2S.
11) Methods of protection from exposure to H2S.
12) Work Practices
13) Engineering controls
14) Personal protective equipment.
15) H2S safe work practices.
17) State and Federal regulatory requirements
18) Rescue techniques, CPR & First Aid for H2S, and post exposure evaluation.
19) Emergency procedures.

The personnel being trained will be issued a wallet card and certificate upon successful completion of this training.

Training Frequency

Employees will be trained according to the following schedule:

1) Upon assignment to a location with H2S.
2) Every 12 months thereafter (if applicable).
28. BENZENE

Purpose

The purpose of this procedure is to provide guidance to company personnel on the potential hazards associated with benzene and to identify occupational settings where this material can be encountered.

The implementation of this procedure will enable the company to comply with OSHA 29 CFR 1910.1028.

Scope

This procedure applies to all company personnel while on or near company or client premises where benzene has the potential to be present and thus cause employee exposure.

Responsibilities

The Safety Coordinator is responsible for aiding in the implementation of this procedure.

Company personnel are responsible for recognizing and anticipating all job hazards that could involve the exposure to benzene to company personnel, client personnel, and the general public or impact the environment.

Introduction

Benzene is an aromatic hydrocarbon that occurs naturally in petroleum crude oils and natural gas condensates.

Health Effects of Benzene

The acute health effects of benzene are:

- Headache
- Dizziness
- Drowsiness
- Respiratory Irritation

The chronic health effect is cancer of the blood forming organs (leukemia).

Procedure

Under normal operating conditions, benzene should not be present in hazardous airborne concentrations at customer facilities.

Company personnel are prohibited from entering work sites posted as benzene regulated areas.

Detecting Benzene in the Workplace
Company personnel may be required to work at customer facilities where there is a potential for benzene to be spilled or become airborne.

A benzene spill or leak can be detected by:
- Odor – Benzene has an aromatic, slightly sweet odor.
- Physical Symptoms – Benzene causes headaches, dizziness, drowsiness and respiratory irritation.
- Gas Monitor – For example, a personal gas monitor that alarms if benzene is detected in dangerous concentrations.

If an employee suspects that a benzene spill or leak has occurred, they must evacuate the area immediately and notify the appropriate personnel at the customer facility.

In the event that Linear Controls personnel were exposed or required to perform any work in an area containing airborne concentration of benzene in excess of 1ppm as an 8-hour TWA, or a STEL in excess of 5ppm as averaged over any 15 minute period, a site specific written Benzene Program will be established and implemented.

The program will address PEL and standards for reducing employee exposure.
- The program will use engineering and work practice controls as the primary means of reducing employee exposure.
  - Proper PPE will be used to supplement these procedures.

This plan will include the schedule for developing and implementing or using engineering and work practice controls.
- The plan will be reviewed and revised to reflect the most current exposure monitoring data.
- The Assistant Secretary of Labor, affected employees and designated employees’ representatives shall have access to this program.

In the event of an unexpected spill or release of the materials the Emergency Response Plan shall immediately be implemented.
- Personnel shall leave the area and not be allowed to return without appropriate personal protective equipment.

**Respiratory Protection**

Respiratory Protection must be worn to prevent potential exposures to benzene during the time period necessary to implement engineering controls or work practices, when engineering controls or work practices are not feasible, or in emergencies.
- Respirators selected shall be those approved by MSHA/NIOSH.

Selection of respirators for preventing benzene exposure is based on the following criteria:

1) For airborne concentrations of 10 ppm or less, as a minimum, a half-face, negative pressure, air purifying respirator with organic vapor cartridges must be used.
2) For airborne concentrations of 50 ppm or less, as a minimum, a full-face piece, negative pressure, air-purifying respirator with organic vapor cartridges must be used.
3) For airborne concentrations of 100 ppm or less, as a minimum, a full-face piece, powered air-purifying respirator with organic vapor cartridge must be used.

4) For any unknown or concentrations determined to be immediately dangerous to life and health (IDLH), a self-contained breathing apparatus (SCBA) with full-face piece in positive pressure demand mode, or a full-face piece, supplied-air respirator in positive pressure demand mode with auxiliary self-contained air supply must be used.

5) For an emergency escape of any concentration, any organic vapor or supplied-air respirator may be used.

A written respiratory protection program shall be established in accordance with 29 CFR 1910.134 (b)(d)(e) & (f).
- Respirator organic vapor cartridges used for benzene protection must be dated at the time of use and must not be used after the day shown on the cartridge.

Personal protective equipment and clothing shall be worn where appropriate to prevent eye contact and limit dermal exposure to benzene or benzene vapors.
- PPE will be provided at no cost to all employees.
- PPE will meet or exceed the requirements established in 29 CFR 1910.333.

Medical Surveillance

If accumulated air monitoring data has indicated that exposures to benzene are well below the 0.5 ppm TWA and 5.0 ppm STEL action levels, annual physicals for benzene medical surveillance are not required.
- If work practices change and personal monitoring data determines exposures in excess of 0.5 ppm TWA or 5.0 ppm STEL, affected employees will be placed in a medical surveillance program.
- Employees not wearing personal protective clothing or respirators while being exposed to a benzene-containing stream due to a leak, spill or cleanup of a spill, personnel will be provided a post emergency examination by the end of their work shift.
- Medical surveillance if employees are or may be exposed to benzene at or above the action level 30 or more days per year, above the PEL 20 or more days – for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to effective date.

Definitions

**Benzene** is an aromatic hydrocarbon with the molecular formula C₆H₆. Benzene is a common intermediate in petroleum processing, and is commonly found in distillates, condensates and solvents.
29. **HEARING CONSERVATION**

**Purpose**

Linear Controls, Inc. has developed and implemented a Hearing Conservation Program to comply with OSHA in 29 CFR 1910.95. Final Rule, issued March 8, 1983, by the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA).

The “Hearing Conservation Program” for company personnel, is designed to protect employee’s hearing against the adverse affects of work related noise.

**Scope**

Employees that are assigned to work in areas exceeding the action level of 85 dB, (85 decibels over an 8 hour time weighted average), or the equivalent of a dose of 50%, shall be included in this continuing effective program.

**Responsibilities**

The Safety Coordinator is responsible for:

1) Noise monitoring.
2) Investigating employee complaints.
3) Reviewing equipment specifications for noise monitoring requirements.
4) Reviewing the program for changes to regulatory requirements.
5) Maintaining hearing test and evaluation records, noise measurement tests of audiometric test facility, and their calibration records.
6) Notifying affected employee that they will be working in high noise areas.
7) Notifying affected employee that they are covered under the company Hearing Conservation Program.
8) Coordinating of annual audiogram testing and notification to the employee of testing appointment.
9) Providing proper hearing protection to employee.
10) Insuring that the employee properly uses hearing protection.
11) Ensuring that each covered employee complete their baseline and annual hearing tests.
12) Providing employees that have demonstrated a significant threshold shift one-on-one training.

Supervisors are responsible for providing assistance in the implementation of this policy.

Company personnel and/or each affected employee shall:

1) Complete the annual hearing conservation training.
2) Complete initial baseline and annual hearing tests when required.
3) Select and use appropriate hearing protective devices provided by the company.
4) Wear the provided hearing protection device(s) and to observe all safety regulations.
Effects of Excessive Noise

The universal nature of noise makes it the single most harmful-to-health contaminant in our environment. Noise not only causes a loss of hearing ability; it also increases mental and physical fatigue, anxiety, and irritability. These "side effects" are especially pronounced if the noise is high-pitched or if the intensity level varies frequently. In addition, noise increases the difficulty of tasks requiring intense concentration, precision, and fine muscular coordination.

Causes and Types of Hearing Loss

Though the Hearing Conservation Program is primarily concerned with hearing loss due to excessive noise, all contributory factors must be evaluated prior to and during your employment, so that you may take appropriate precautions and actions.

This program is not intended as a guide to self-diagnosis and/or treatment.

There are five major types of hearing loss. It is important for you to realize that any existing or potential hearing loss may be due to one or more of the listed causes.

Sensorineural Hearing Loss

Hearing loss due only to damage of the inner ear or auditory nerve is termed sensorineural losses.

Causes of Sensorineural Hearing Loss

1) Birth Related Problems
   a. In contrast to conductive birth related problems, those affecting the sensorineural hearing mechanism are usually not treatable.

2) Old Age
   a. No known effective medical treatment exists for the natural loss of hearing ability with increasing age.
   b. This loss usually becomes noticeable between the ages of 55 to 70, first affecting the high frequencies and gradually spreading to the lower frequencies critical for speech discrimination.
   c. This loss is called presbycusis.

3) Drugs
   a. Certain drugs, when taken in excessive quantities, are considered toxic (poisonous) to the hearing system.
   b. Aspirin, the most common of toxic drugs may cause a temporary loss of hearing.
   c. Quinine, neomycin, streptomycin and kanamycin are also toxic.

4) Illness and Disease

5) Acoustic Trauma
   a. Acoustic Trauma refers to hearing loss produced by sudden physical injury, usually traceable to a single incident, such as an intense blast of noise or blow to the head.

6) Prolonged Exposure to Excessive Noise Levels
   a. The cumulative effects of months and years of exposure to hazardous noise levels always produces permanent hearing loss due to injury of the sensorineural components.
b. Unlike many of the other causes of impairment, noise-induced hearing loss usually affects both ears in extent and degree.

Conductive Hearing Loss

Conductive hearing losses, as opposed to sensorineural hearing losses, are usually traceable to diseases of the outer and middle ear. As stated earlier, the outer and middle ears conduct sound to the inner ear, where it is transmitted into electrical impulses for transmission by the auditory nerve to the brain.

Conductive hearing loss occurs when problems in the outer and or middle ear prevent or inhibit sound from reaching healthy inner ear and central auditory nervous system components.

This type of impairment is usually correctable.

Representative Causes of Conductive Hearing Loss Are:
1) Birth related problems
2) Inflammation and infection
3) Blockage of the ear canal
4) Ruptured or pierced eardrum
5) Diseases of the Middle Ear Bones
6) Accumulation of Shed Skin Layers

Mixed Hearing Loss

In this type of hearing impairment, conductive and sensorineural losses are simultaneously present in the same ear.

Central Auditory Nervous System Hearing Loss

The outer, middle and inner ear may all function normally, but hearing loss may still occur due to:
1) Brain damage of malformation at birth.
2) Brain tumors.
3) Trauma to the brain.
4) Toxic drugs.

Functional or Inorganic Hearing Loss

A psychological rather than physical basis exists for this type of impairment.

In one form of functional hearing loss, the afflicted individual is unaware of the deep seated mental origin of his loss and perceives the loss to be real.

In the other type of functional hearing loss, the person consciously fakes the loss.

Techniques exist for detecting this type of functional hearing loss.
Noise and Noise-Induced Hearing Loss

Occupational hearing loss (hearing loss related to one’s employment) results from two of the causes associated with sensorineural impairment, acoustic trauma and noise. It is much easier to attribute a job-related hearing loss to a specific blow to the head or other traumatic event, but long-term exposure to noise is the most common cause of hearing loss.

NIHL is caused by exposure to sound levels or duration that damages the hair cells of the cochlea.

Initially, the noise exposure may cause a temporary threshold shift, that is, a decrease in hearing sensitivity that typically returns to its former level within a few minutes to a few hours.

Repeated exposures lead to a permanent threshold shift, which is an irreversible sensorineural hearing loss.

Hearing loss has causes other than occupational noise exposure.

Hearing loss caused by exposure to non-occupational noise, including recreational and environmental noises, (e.g., loud music, guns, power tools, and household appliances), affect the ear the same as occupational noise.

Combined exposures to noise and certain physical or chemical agents, (e.g., vibration, organic solvents, carbon monoxide, ototoxic drugs, and certain metals), or some prescription drugs, appear to have synergistic effects on hearing loss.

Noise exposure is also associated with non-auditory effects such as psychological stress and disruption of job performance.

Procedure

Hearing Conservation Program (HCP)

The “Hearing Conservation Program” for company employees, is designed to protect employee’s hearing against the adverse affects of work related noise.

HCP Action Level

Employees that are assigned to work in areas exceeding the action level of 85 dB, (85 decibels over an 8 hour time weighted average) or the equivalent of a dose of 50% shall be included in this program.

Employees designated to be included in the HCP will be provided the following at no expense to the employee:

1) Monitoring
   a. The company shall monitor noise levels in the workplace to identify employees exposed to noise at or above the action level of 85 dB.
   2) Audiometric testing including a baseline audiogram, an annual audiogram, and audiogram evaluation, will be provided.
3) Hearing protection, including its proper selection, use, care, and fitting.
   a. The supervisor in charge will ensure that the employee wears the hearing protection.
   b. Hearing protection will be replaced as necessary at no cost to the employee.

4) Initial and annual training for this program.

Warning Signs

Warning signs shall be posted and clearly visible at the entrance to, or the periphery, of areas where noise exposures routinely equal or exceed 85 dB as an 8-hr. TWA.

Client locations should have warning signs posted.

All warning signs shall be in English and, where applicable, in the predominant language of workers who do not read English.

Employees unable to read the warning signs shall be informed verbally about the instructions printed on signs in hazardous work areas of the facility.

Monitoring

The purpose of the Hearing Conservation Program is to protect employees from suffering work-related hearing losses. Therefore, noise levels in the work area shall be monitored.

Purpose of Monitoring

Monitoring provides a means of:
1) Identifying employees who must be enrolled in the Hearing Conservation Program.
2) Identifying employees for whom hearing protection is mandatory.
3) Determining the amount of noise reduction that hearing protectors must provide.
4) Familiarizing the company and its employees with the degree of the noise hazard.

Noise Monitoring Procedures

Personal Monitoring

When information indicates that an employee exposure may be equal or exceed the 8 hour-weighted average of 85 decibels, the company will include them in the monitoring program to identify if they need to be included in the hearing conservation program.

This method is used for determining individual exposures to noise, particularly in work areas where employees move about frequently or where the noise intensity tends to fluctuate greatly over time.
Area Monitoring

Generally, the company may use this method to determine if an area is to be posted as a "High Noise Area".

If an area is so designated, all employees must wear approved hearing protection while in that area.

The area monitoring procedure can also be used to estimate the noise exposure of individual employees, when the noise levels are relatively constant and the employees are relatively stationary.

Frequency of Monitoring

The frequency of noise monitoring will depend upon conditions, which are specific for the work area.

Monitoring shall be repeated whenever changes in process or equipment increase noise exposures such that additional employees (i.e. not previously included in the Hearing Loss Prevention Program) may be exposed at or above the action level.

Also, the company shall evaluate such factors as employee complaints and equipment specifications to determine the frequency of monitoring.

Noise Monitoring Results

Any personnel working in a High Noise Area must wear appropriate hearing protection and not exceed the maximum noise exposure.

Noise Data

The following table represents examples of the noise levels, (sound pressure levels for different work locations.)

Noise Level Examples:
1) Rocket Launching 180 dB
2) Jet aircraft 140 dB
3) Gunshot blast 150 dB
4) Automobile horn 120 dB
5) Sandblasting 112 dB
6) Diesel Crane (Full throttle) 110 dB
7) Woodworking shop 100 dB
8) Diesel Crane (idle) 93 dB
9) Very loud speech 85 dB
10) Noisy restaurant 80 dB
11) Heavy traffic 75 dB
12) Typical conversational speech 65 dB
13) Average home 50 dB
14) Quiet office 40 dB
15) Birds singing 40 dB
16) Whisper 35 dB
17) Hearing threshold 0 dB

Audiometric Testing Program

The company has established and will maintain an Audiometric Testing Program for employees that may be exposed equal/exceed the 8 hr time-weighted avg. of 85 decibels, at no cost to the employee.

An audiometric test, or hearing test, monitors the sharpness or acuity of a person’s hearing over a period of time.

The testing program includes a valid baseline audiogram shall be performed within 6 months of an employee’s first exposure at or above the action level when an affected employee is initially hired, or when a transfer into an affected position occurs.

Annually thereafter, an audiogram shall be performed to indicate whether hearing loss is prevented through this program.

Baseline Audiogram

The baseline audiogram is the reference against which future audiograms are compared.

A baseline audiogram must be provided within six (6) months of employment, transfer into an affected position, or an employee’s first exposure at or above an 8-hour time weighted average of 85 dB.

When a mobile van is used, the baseline shall be established within 1 year.

An employee shall not be exposed to workplace noise at or above 85 dB for a minimum of 14 hours preceding the baseline audiometric test.

• Hearing protection may be used to meet this requirement.

The employee shall also be notified to avoid high levels of non-occupational noise for the same period of time.

Annual Audiogram

An audiogram shall be conducted within one year of the baseline and annually thereafter as long as the employee remains in the affected position.

Audiogram Evaluation

The annual audiogram shall be compared to the baseline audiogram to determine whether the audiogram is valid and to determine whether the employee has lost any ability to hear, i.e. if a standard threshold shift, (STS), has occurred.

Follow-up Procedures for Standard Threshold Shift

When the review of an employee’s audiogram detects a standard threshold shift, the employee shall receive written notification within 21 days of the determination.
A confirmation audiogram within 30 days shall be provided.

This confirmation test shall be conducted under the same conditions as those of a baseline audiometric test.

**Confirmation of STS**

When a significant threshold shift has been validated, the company shall take appropriate action to protect the employee from additional hearing loss due to occupational noise exposure.

The company shall:

1) Require the employee not using hearing protection to be fitted and trained in the use, care, and requirement to use hearing protection.
2) Require employee already using hearing protection to be refitted and retrained in the use of hearing protection, and if necessary, provide the employee hearing protection with greater attenuation.
3) Explain to the employee the effects of hearing loss.
4) Enter on OSHA 200 Injury and Illness Log.

**Hearing Protection**

The most effective approach to NIHL is to remove the hazardous noise from the workplace or to remove the employee from the hazardous noise source.

Since administrative or engineering controls cannot always prevent excessive noise exposure, it is then necessary for employees to wear a personal hearing protection device.

A personal hearing protection device, HPD, is any hearing device designed to reduce the level of sound reaching the eardrum.

Earmuffs, earplugs, and ear canal inserts are the main types of HPD's.

Items not specifically designed and manufactured for hearing protection, such as cotton, cigarette filters, etc., must never be used to protect hearing.

**Wearing of Hearing Protection Devices**

The Hearing Conservation Program requires that effective hearing protection is properly worn by:

1) All employees exposed at or above the action level.
2) All employees who have incurred a Standard Threshold Shift.
3) All personnel entering posted "High Noise Area" locations.

**Hearing Protection Requirements**

Linear Controls, Inc. will provide hearing protection to all employees exposed to an 8-hr. time-weighted average of 85 decibels.

For all affected employees required to wear hearing protection, the company shall:
1) Evaluate hearing protection for the specific noise environment in which the protector will be used.
2) Provide choices of hearing protection devices appropriate to the work environment at no cost to the employee.
3) Provide training to affected employees by qualified individuals to ensure that the approved hearing protectors are properly fitted.
4) Provide continuing on-the-job training to affected employees, covering at the minimum, the correct use and care of the selected hearing protectors.
5) Require all affected employees to wear effective hearing protection devices until such time as they are no longer required.

**Employee Exposure and Medical Records**

The company will maintain accurate records of all employees' exposure measurements and that all records will be maintained as required by the regulations.

An employee is permitted access to their records following the company procedure "Access to Employee Exposure and Medical Records".

**Availability of Records**

Upon request by an employee or employee’s designated representative, or former employee affected under this program, or the Assistant Secretary and the Director, the company shall provide access to the records required under this program.

**Training Requirements**

Employee training is critical to the success of the program to prevent hearing loss.

Employees included in the HCP, shall be trained at least annually on the following information regarding hearing protection:

1) The physical and psychological effects of noise and hearing loss.
2) Purpose, advantages, and disadvantages of various types of hearing protectors.
3) The selections, fit, and care of hearing protectors.
4) The purpose and procedures of audiometric testing.
5) Responsibilities of the company, managers, and employees in preventing noise induced hearing loss.

The training program will be updated consistent to changes in PPE and work process.

**Training Frequency**

Company personnel will be trained according to the following schedule:

1) Initially.
2) Annually thereafter.

**Definitions**

**Action Level** is an 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of fifty percent.
**Audiogram** is a chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

**Audiologist** is a professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners.

**Baseline audiogram** is the audiogram against which future audiograms are compared.

**Criterion sound level** is a sound level of 90 decibels.

**Decibel (dB)** is the unit of measurement of sound level.

**Hertz (Hz)** is the unit of measurement of frequency, numerically equal to cycles per second.

**Noise dosimeter** is an instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.

An **otolaryngologist** is a physician specializing in diagnosis and treatment of disorders of the ear, nose, and throat.

**Representative exposure** is the measurements of an employee's noise dose or 8-hour time-weighted average sound level that the employers deem to be representative of the exposures of other employees in the workplace.

**Sound level meter** is an instrument for the measurement of sound level.

**Time-weighted average sound level** is that sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured.
30. FALL PROTECTION

Purpose

The purpose of this procedure is to establish the safety requirements for Linear Controls, Inc. personnel when working at heights and enable the company to comply with OSHA 29 CFR 1926.500.

Scope

This procedure applies to all work conducted at unprotected heights of six feet (1.8 meters) or more.

This procedure includes fall hazard identification and proper use and maintenance of fall protection devices.

Responsibilities

The Safety Coordinator, who is qualified by experience and training, has been designated as the Competent Person and is responsible for issuing fall protection equipment to company personnel as needed.

Company personnel are responsible for identifying fall hazards at each customer site where they perform services and applying this procedure or the customer site specific procedure as required.

Additional responsibilities include:

1) Procuring a safety harness from the work site or home office to work at unprotected heights over six feet (1.8 meters).
2) Familiarizing themselves with the fall protection systems in use at their customer facilities.
3) Not to design, erect, or disassemble scaffolding.

It will be the responsibility of the client to provide proper anchorage points, design, erect, inspect, and disassemble all scaffolding.

Procedure

This procedure provides for continuous or 100% tie off fall protection, when the possibility of a fall of six (6) feet or greater exists. This means that the employee must be tied off 100% of the time while repositioning or moving into a work area at heights of six (6) feet or greater. This may occur when work activities include traversing, climbing, descending, etc. This can be achieved by the use of a double strap, Y lanyard or a self-retracting lifeline.

When conventional fall protection is not used, these locations must be identified and classified as controlled access zones.

- This will be the responsibility of the competent person on location.

All employees who are potentially exposed to falls from heights of 6 feet or more to lower levels shall be provided and required to use guard rails, safety nets, or wear full body
harnesses with a fall arrest system, i.e., lanyards with shock absorbing attachments, when standard methods of protection would not be feasible or they would create a greater hazard.
  • This includes work near and around excavations.

Where no alternate methods have been implemented, a safety monitoring system shall be implemented.

A competent person will be assigned to:
1) Recognize fall hazards
2) Monitor the safety of all employees and warn them when it appears to the monitor that they are unaware of the hazard or are acting in an unsafe manner.
3) Be on the same working surface and within visual sighting distance of the employees.
4) Stay close enough to verbally communicate with the employees.
5) Not have other assignments that would take his attention from the monitoring function.

Accidents and near misses will be investigated on all incidents in order to determine if the site specific fall protection program is flawed.

Changes that will correct the deficiencies in the program will be implemented.

When purchasing equipment and raw materials for use in personal fall arrest systems, they shall meet the requirements of the appropriate OSHA, ANSI, and ASTM standards.

Fall protection system shall limit free fall to 6 feet.

**Personal Fall Arrest Systems (PFAS)**

Personal fall systems must consist of a full body harness with a shock absorbing lanyard.

All components of the system used must be from the same manufacturer.

Body belts are not acceptable for use as fall protection devices.

**Safety Belts**

Safety Belts are for positioning work only. They offer no type of fall protection and for this reason the company does not allow the use of Safety Belts.

Only full body harnesses will be used.

**Full Body Harnesses**

Full body harnesses shall be used for fall protection and shall have a lanyard with a shock absorber or fall-restricting device made into the lanyard.
Lanyards

A lanyard is a flexible line to secure a wearer of a safety belt or harness to a drop-line, lifeline, or fixed anchorage above the point of operation with a shock absorber or fall-restricting device made into it. It shall have a nominal breaking strength of 5,000 pounds.

All lanyards shall be used with a double locking snap hook when used with a fall-arresting device.

Care shall be exercised to ensure that the lanyard is not cut, pinched, or led over a sharp edge.

In hot-work operations, or those involving the use of acids, solvents, or caustics, the lanyard shall be kept clear to avoid its being burned or weakened.

Deceleration Mechanism

Self-retracting lifelines and lanyards which automatically limit fall distance to two feet or less, shall be capable of sustaining a minimum tensile load of 3000 lb. applied to the device with the lifeline or lanyard in fully extended position.

Snap-hooks shall not be engaged:
1) Directly to webbing
2) To rope or wire rope
3) To each other
4) To a Dee-ring to which another snap-hook or other connector is attached
5) To a horizontal lifeline
6) To an object which is incompatibly shaped or dimensioned in relation to the snap-hook, such that unintentional disengagement could occur by the connected object being able to depress the snap-hook keeper and release itself.

Lifeline

A lifeline is a flexible line from a fixed anchorage or between two fixed anchorage points to which the lanyard or belt is secured.

Vertical Lifeline (Drop-line) is a line suspended from a fixed anchorage, independent of the work surface, to which the lanyard is attached.

Horizontal Lifeline is a line between two fixed anchorage points independent of and above the work surface, to which a lanyard is secured by means of a safe sliding connection.

Retracting Lifelines allow free travel without slack rope, but lock instantly when a fall begins.

Guardrail Systems

Company personnel must assess whether a customer site has adequate guardrail systems.
Guard rails shall be constructed with a top rail at least 42 inches (1.1 meters) from the walking/working surface.

Mid-rails must be located midway between the working surface and the top rail.

Top rails must be capable of withstanding, without failure, a force of at least 200 pounds (90.1 kilograms).

Mid-rails, screens, and mesh must be capable of withstanding a force of 150 pounds (68 kilograms).

Safety Nets

Although safety nets may be used at a customer site, they are not considered adequate fall protection for company personnel.

If safety nets are to be used as a primary means of fall protection, the Safety Coordinator must be consulted.

A specific plan that includes the design of the netting system, drop testing, and employee training (developed by the customer) must be reviewed and approved.

Tie-Off Points

A tie-off Point (Anchorage) is a secure point of attachment, not part of the work surface, to which drop-lines, lifelines, or lanyards are affixed. Employees must tie-off to a substantial support, free of sharp edges and residue, which could cause the lanyard to fail.

A substantial support is defined as being capable of supporting 5,000 pounds (2,272 kilograms) per employee.

Employees shall tie-off when:

1) Working on any incomplete scaffolding.
2) Working on any ladder or climbing device, which could, if struck, fall with the employee.
3) Extending beyond the shoulders over a railing.
4) The feet are not on the floor of the work platform, regardless of the presence of handrails or other restraining devices.
   a. This includes anytime that an employee climbs on a rail or other device, leaving the floor of the platform.

When selecting a tie-off point, in addition to selecting a substantial element, you must also ensure that it will provide you with adequate distance to fall safely.

Tie-off must be to a substantial support, independent of the climbing device.

For this reason, tie-off points will generally be above your head.

The maximum fall must not exceed the lanyard length plus the deceleration distance added to the height of the worker.
When connecting the lanyard to an anchor point you must:

1) Ensure that the free fall distance will be six feet (1.8 meters) or less.
   a. This is generally determined by the length of your lanyard.

2) Check the fall path to ensure that no lower level, obstacle, or dangerous machinery will be struck should a fall occur.

3) Apply the following formula to calculate whether a selected tie-off point is appropriate.
   a. Maximum Fall = Height of worker + Lanyard length + Max extension of shock absorber = (deceleration distance)

**Fall Protection Equipment Inspections**

All safety belts, harnesses, lifelines, lanyards, and accessories shall be inspected according to manufacturer’s recommendations, not less than twice annually and visually before each use.

If a part is contaminated with dirt, pigment, or foreign materials that would interfere with visual inspection, it should be cleaned in mild detergent and water and dried.

All fall protection equipment must be inspected before each use by the employee.

Personal fall arrest systems and components subject to impact loading will be immediately removed from service and not used again, until inspected and determined by a competent person to be undamaged and/or repaired and suitable for reuse.

All defective components will be removed from service or repaired.

Safety belts, lanyards, or lifelines subjected to drop loading from actual use, or drop loading tests shall be rendered unfit for field use and destroyed.

Safety belts, harnesses, lifelines, lanyards, and accessories should be cleaned after use and stored in a clean, dry area at normal temperatures.

**Donning and Doffing a Safety Harnesses**

After inspection, each harness must be checked for proper alignment and directional orientation.

All buckles and D-rings must face the proper direction for proper donning.

The employee shall follow manufacturer instructions for donning and doffing.

The harness, if properly adjusted, should not interfere with normal motion, bending or crouching.

Fall protection equipment must be stored properly and in an orderly fashion to prevent tangles.
Rescue

Management shall provide for prompt rescue of employees in event of a fall or shall assure that employees are able to rescue themselves.

Employees working on client work sites must confirm that rescue procedures are in place before beginning work that requires personal fall protection equipment or assure that they are able to rescue themselves.

Training Requirements

Company personnel who are subject to fall hazards must be trained with the type of fall protection they will use on the job.

The training will include the following topics:
1) Company Policy
2) Regulatory Requirements
3) Application Limits
   a. Estimation of Free Fall Distance
   b. Including Determination of Deceleration Distance
   c. Total Fall Distance to Prevent Striking a Lower Level
4) Recognize fall hazards and methods to minimize these hazards.
5) Methods to Use
6) Inspection and Storage of Equipment
7) Manufacturer's Recommendations
8) Inspection of the personal fall arrest system components.
   a. Proper donning and doffing techniques.
9) Avoiding entrapment of body parts in the harness.
10) Choosing proper tie-off points.
11) Activities where fall protection will be a requirement regardless of other protection available.
12) The process and practice of 100% tie-off as required at many customer sites.
13) The use of fall protection on ladders, pipe racks, structural steel, scaffolds and other potential applications.

Management will have written Certification records that shall include the following:
1) Employee name.
2) Date of training.
3) Signature of instructor.
4) Signature of employer.

Training Frequency

Retraining will be provided when the following are noted:
1) When employee demonstrates deficient knowledge, thus a deficiency of training exists.
2) Workplace changes.
3) Fall protection systems or equipment changes that render previous training obsolete.
4) Changes in policy or equipment rendering training obsolete.
Definitions

**Anchor point** is a secure point of attachment for lifelines, lanyards, or deceleration devices.

**Body belt (safety belt)** is a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

**Body harness** is straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders, and with means for attaching it to other components of a personal fall arrest system.

**Deceleration device** is any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

**Deceleration distance** is the additional vertical distance a falling employee travels from the point at which the deceleration device begins to operate excluding lifeline elongation and free fall distance, before stopping.

- It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

**Free fall** is the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

**Free fall distance** is the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall.

- Free fall distance excludes deceleration distance plus lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension, before they operate and fall arrest forces occur.

**Guardrail system** is a barrier erected to prevent employees from falling to lower levels.

**Lanyard** is a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body harness to a deceleration device, lifeline, or tie-off point.

**Lifeline** is a component consisting of a flexible line for connection to an anchor point at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

**Lower levels** are areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.
**Self-retracting lifeline/lanyard** is a deceleration device containing a drum-wound line which can be slowly extracted or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

**Snap-hook** is a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap-hooks are generally one of two types:

- The locking type with a self-closing, self-locking keeper, which remains closed and locked until unlocked and pressed open for connection or disconnection; or
- The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection.
  - Management does not permit the use of a non-locking snap-hook as part of personal fall arrest systems and positioning device systems.

**Tie-off point** or anchor point is a secure point of attachment for lifelines, lanyards or deceleration devices.

**Toe board** is a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

**Unprotected sides and edges** are any side or edge (except at entrances to points of access) of a walking/working surface; for example, floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches (1.0 m) high.

**Walking/working surface** is any surface, whether horizontal or vertical, on which an employee walks or works; including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel but not including ladders, vehicles, or trailers, that employees must use to perform their job duties.

**Work area** is a walking/working surface where job duties are being done.
31. OCCUPATIONAL ILLNESS AND INJURY RECORDKEEPING

Purpose

The purpose of this procedure is to provide Linear Controls, Inc. personnel information regarding occupational illness and injury recordkeeping.

Procedure

Occupational Safety and Health Administration (OSHA) requires that a “Log of Occupational Injuries and Illnesses”, known as the OSHA 300 Log, be maintained at each geographical location of a business. This log is subject to inspection by OSHA officials and failure to comply will result in citations and fines.

Each recordable injury or illness must be entered on an OSHA 300 Log and 301 Incident Report, or other equivalent form, within seven (7) calendar days of receiving information that a recordable injury or illness has occurred.

To accommodate personnel who may be mobile or sales personnel, there is some flexibility to allow the log to be maintained at a more centralized location.

Each designated “major” sales office is responsible for maintaining an OSHA 300 Log. This log will be used to cover all employees at that physical location.

The designated office manager of a major sales office is responsible to ensure that:

1) An OSHA 300 Log and corresponding “Employer Report of Occupational Injury/Illness,” are being maintained for the current year.
2) A file is maintained for previous year logs and forms for that location.
   a. Minimum retention time is five (5) years.
3) The right hand portion of the previous year’s log is posted in a conspicuous place from February 1st to April 30th.
   a. A company executive must certify that he or she has examined the OSHA 300 Log.
4) A copy of the right hand portion of the previous year’s log must be sent to the satellite locations.
5) A copy of each location’s previous year’s OSHA 300 Log must be sent to the Safety Coordinator by the 1st of February.

Guidelines for Safety Reporting

OSHA guidelines were issued for recording occupational injuries and illnesses. OSHA has been rigorously enforcing the revised guidelines. These guidelines mainly clarified what had been “grey” areas. The main responsibility is to recognize that a potentially recordable incident has occurred to someone in the group, and then contact the Safety Coordinator as necessary to assist in classification.
On the Job

There are two (2) different types of recordable cases that occur on the job: 1) occupational injuries and 2) occupational illnesses. The procedure for recording both types of cases is considerably different. The procedures are discussed below.

Case Must Be Work Related

In an office building, an accident and any resulting injury is presumed to be work related, including slips, trips, falls, cuts, etc., if the injury occurs on the premises. There are exceptions, such as injuries that occur at company provided recreational facilities, if the activity is not a company requirement. Keep in mind that if employees are injured while traveling on company business, then the case may also be work related. As an aid, the process for determining work relationship will be assisted by the Safety Coordinator at the time the incident is reported. Once the determination is made that the case is work related, then whether the case is recordable is determined by the criteria in the following sections.

Occupational Injuries

To be recordable, an injury must be due to an “instantaneous event” and must result in one of the following:

1) Non-Lost Workday Case (Medical treatment other than first aid).
   a. Medical treatment means more than one trip to the doctor where treatment is given, or even having prescribed more than one dose of prescription medication.

2) Loss of Consciousness.
   a. Loss of consciousness would have to be due to an accident and not related to an employee’s physical health.

3) Restriction of Work or Motion.
   a. The restriction would normally imply that the employee could not do his/her normal job.

4) Transfer to Another Job.
   a. This reason for recordable also implies that because of an injury, the employee was unable to do his/her original job.

Keep in mind that the “instantaneous event” mentioned above does not have to be an accident. The event could be lifting an object, or pushing on a credenza.

To be an injury, the event which caused the injury must occur in an “instant” or a very short time. This definition becomes important when considering occupational “illnesses” in the next section.

Occupational Illnesses

Whether a case involves an injury or illness is determined by the nature of the original event or exposure in the workplace that caused the case, not by the resulting condition of the affected employee. An occupational illness is the result of an extended exposure to environmental factors in the workplace that results in an abnormal condition or disorder to an employee. At first it may seem that in an office building type environment,
occupational illnesses would not occur. However, a few actual cases are listed below to give an idea of the type of recordable illnesses that can occur.

1) Allergic reaction to paint fumes.
2) Allergic reaction to cigarette/cigar smoke.
3) Ear infection resulting from flying with a head cold.

Once a case is determined to be recordable, then the “extent” of the case must be determined. The classifications for extent are listed below, but again, the Safety Coordinator is available to help decide the classification.

1) Fatalities.
   a. Effective May 2, 1994, employers are required to orally report to OSHA work-related incidents resulting in the death of an employee or the hospitalization of three or more employees within eight (8) hours after the employer learns of the incident. It also applies to each fatality or hospitalization of three or more employees occurring within thirty (30) days of the incident.
   b. This report will only be made by Linear Controls, Inc. management. OSHA’s toll-free central telephone number is 1-800-325-OSHA.

2) Lost work day cases.
   a. Days away from work (disabled).
   b. Days of restricted work (at work, but can’t do total job).

3) Non-lost work case.
   a. Recordable, but can still do total job.

4) Occupational injuries or illnesses to contractors working under supervision must also be reported in some cases.

Incidents must also be reported to the client as soon as possible or in a timely manner (within 24 hours of incident).

Off the Job

Reporting off the job injuries is considerably different from on the job. First, reporting is an internal company requirement rather than part of OSHA reporting. Second, only “disabling” injuries, and not illnesses, are recorded. Disabling injuries are those that result in the employee missing at least one day of work. Restricted ability on the job due to an off the job accident is not reportable.

Documentation

Each reportable case and all cases incurring medical bills should be documented on the workman’s comp form, in addition to entering the case on the OSHA 300 Log. The “Employee Report of Occupational Injury/Illness” serves as the official “101 Form”, which must be filed with the OSHA 300 Log and retained for five (5) years.

Independent Contractors

OSHA has requirements for recording occupational injuries and illnesses for independent contractors. The OSHA regulation requires that occupational injuries and illnesses of independent contractors working on an employer’s premises and subject to the employer’s direction and control with no contractor supervisor stationed on the premises or responsible for supervision of such independent contractor, be recorded on
the site’s OSHA 300 Log and the appropriate OSHA 301 form. Procedures shall be place to ensure that recordable injuries and illnesses of independent contractors are reported on the appropriate log. Contact the Safety Coordinator for any injury or illness fitting this definition.

If the employer can verify that the contract employee does maintain an OSHA 300 Log for employees, then there is no need to include recordable incidents on the employer’s log. To properly document this, the employer shall request a letter from the contractor certifying that all employees that are provided to the company are appropriately covered by the contractor.

Clearly, all “independent” contractors, such as an independent computer programmer, shall be covered on the company log if there is a recordable incident.
32. ACCIDENT REPORTING AND INVESTIGATION

Purpose

The purpose of this procedure is to provide Linear Controls, Inc. personnel information on accident reporting and investigation.

Reporting Requirements

All incidents (Near Miss, First Aid Incidents, Recordable Incidents, Property Damage, Environmental Incidents, Vehicle and Fire) must be immediately reported to the Safety Coordinator.

- If an incident occurs on a client location/facility, the appropriate client representative must be notified.

All injuries, no matter how slight, must be reported to the Safety Coordinator immediately. The Safety Coordinator will inform appropriate company personnel.

- The Safety Coordinator or another designated company representative shall accompany Linear Controls, Inc. personnel to medical facilities (i.e., Emergency Room, Medical Clinics, etc.).
- In the event an accident/injury occurs on a client location/facility, the Safety Coordinator will contact the appropriate client representative to inform them of the accident/injury.

Required incidents must be verbally reported to OSHA within eight (8) hours of their discovery. Incidents must also be reported to the owner client as soon as possible or in a timely manner (within 24 hours of incident).

All injuries, which occur during the course of employment, must be reported on the Incident/Injury Report Form and include a detailed narrative statement concerning how the incident occurred (see Accident Investigations below). The format of the narrative report may include an introduction, methodology, summary of the incident, investigation team members, narrative of the event, findings and recommendations. Photographs, witness statements, drawings, etc. should be included. The Supervisor must sign this form and enough information should be given to clearly explain what happened. There must be enough information provided to complete the required OSHA 300 Form.

Accidents which prevent the employee from returning to work on his next scheduled work day shall be reported as Lost-time accidents, and the number of days lost must be reported to the home office on the employees return to work.

In cases of death from any cause or serious injury, the Safety Coordinator shall be notified immediately. Any special documents that may be required by governmental authorities will be promptly filled out and processed according to their instructions.

Incident investigations shall be conducted for all accidents and should result in corrective actions.
Accident Investigations

All accidents (LTA’s and NLTA’s) and “hypo-near misses” that could have resulted in serious accidents will be investigated by the Safety Coordinator.

- The Safety Coordinator shall be trained in incident investigation techniques. Accident investigations are to be conducted as soon as possible after the accident itself, as facts are clearer, more details remembered, and the conditions are nearest those at the time of the accident. Proper equipment (PPE, tools, cameras, etc.,) will be made available to assist in conducting an investigation. The accident investigation will be conducted in the following manner:

1) Interview the worker who had the accident, medical considerations permitting.
2) Interview all other crewmembers and supervisors involved in the accident.
   a. Witness interviews and statements must be collected.
   b. Collection of the witness’s contact information must be documented in case a follow-up interview is needed.
3) Determine the facts, based on all information gathered.
4) Determine who had the most control over what inflicted the injury or damage.
5) Determine all factors or causes which led to the accident.
   a. Evidence such as people, positions of equipment, parts, and papers must be preserved, secured, and collected.
6) Take steps to prevent a similar accident from happening again.
   a. Lessons learned should be reviewed and communicated.
   b. Changes to processes must be placed into effect to prevent reoccurrence or similar events.
7) Document the investigation and corrective actions.

Near Miss Accident Reporting

A near miss is an unplanned, unexpected occurrence that interferes with or interrupts the orderly progress of work or has the potential to cause personal injury or dollar loss through property damage. A near miss does not have to result in injury or damage.

Employees shall report all near miss incidents to their supervisor as soon as possible following the incident. They also need to be reported during safety meetings. Supervisors should review all near miss incidents. Investigations should be documented. Recommendations to prevent recurrence shall be included in the review.

Near miss documentation shall be forwarded to the Safety Coordinator who will disseminate the information.
33. ACCESS TO EMPLOYEE EXPOSURE AND MEDICAL RECORDS

Purpose

The purpose of this procedure is to provide company personnel information on how to access their exposure and medical records.

All employees will be informed of this procedure at the time of employment and annually thereafter as per OSHA 29 CFR 1910.1020 and 29 CFR 1926.33.

Scope

This procedure applies to all employees seeking access to their workplace exposure and/or medical records.

Procedure

All personnel desiring access to their workplace exposure records must submit a request in writing to Linear Controls.

- Access to records must be provided in a reasonable time, place, and manner. If access to records cannot reasonably be provided with fifteen (15) working days, the company shall within fifteen (15) working days apprise the employee or designated representative requesting the record of the reason for the delay and earliest date when the record can be made available.
- Whenever an employee or designated representative requests a copy of a record, that record must be provided at not cost.
- In the event of an emergency, medical records may be released on an expedited basis to the employee or his/her designated representative.
- Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be used under the circumstances indirectly to identify specific employees (exact age, height, weight, race, sex, date of initial employment, job title, etc.), personal identifiers must be removed before access is provided.

Medical records must be retained for the duration of employment plus thirty (30) years.

Employee exposure records must be retained for thirty (30) years.

In the event Linear Controls, Inc. is ceasing to do business, the company shall transfer all records subject to this section to the successor employer.

- If there is no successor employer to receive and maintain the records, or the company intends to dispose of any records required to be preserved for at least thirty (30) years, the company shall transfer the records to the Director of the National Institute for Occupational Safety and Health (NIOSH) if so required by a specific occupational safety and health standard.
Training Requirements

All personnel must receive awareness training in the following areas:
- The existence, location, and availability of their medical records.
- The person responsible for maintaining and providing access to their medical records.
- The employee’s right of access to his/her medical records.

Training Frequency

All company personnel must be trained:
- Initially.
- Annually.

Definitions

“Access” means the right and opportunity to examine and copy.

“Designated representative” means any individual or organization to which an employee gives written authorization to exercise a right of access.

“Employee medical record” means a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel, or technician.
- Medical records may include the following types of information:
  1) Questionnaires
  2) Examination results
  3) Laboratory test results
  4) Medical opinions
  5) Treatment descriptions
  6) Employee medical complaints

Exceptions

The term “medical record” does not include physical specimens, separately maintained insurance records, records created solely for litigation purposes and are privileged from discovery, or records regarding the Employee Assistance Program.

“Exposure records” means any documents containing the following types of information:
- Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent including personal, area, grab, wipe, or other forms of sampling.
- Other information such as related collection and analytical methodologies, calculations, and other background data relevant to interpreting the results may be included
- Biological monitoring results.
- Material Safety Data Sheet
34. MANAGEMENT OF CHANGE

Purpose

The Management of Change (MOC) procedure was developed by Linear Controls to properly manage and document the modification or change to process and equipment.

The impact of modifications or changes must be reviewed prior to implementation to ensure the continued safe operations of the facility.

This procedure will ensure the maintenance of process equipment and documentation covered under the OSHA Process Safety Management Standard are followed.

Scope

Management of Change procedures are provide to ensure the safety of personnel, equipment, facilities, and the environment when changes or modifications to existing operating procedures, operating conditions, equipment, materials and personnel changes are made.

Procedure

Management of Change procedures ensure that Linear Controls makes changes only after the consequences of such changes have been adequately evaluated. MOC procedures also help to ensure that safety and environmental information is kept up-to-date.

*In most applications the client’s Management of Change will be used.*

MOC’s may be initiated by personnel in the field or home office. Anyone who sees the need for a change may fill out the client’s request form for MOC. For more information on the procedure for initiating, reviewing, processing, and time limitations for resolutions of MOC’s, refer to client’s Management of Change Flowchart. In the event the client’s MOC request form is not available linear Controls form should be used.

Emergencies

Changes intended to respond to emergency situations may be implemented immediately upon the verbal approval of the clients Production Foreman/Lead Foreman before the full written MOC procedures are completed. As soon as practical after the emergency, the MOC process is initiated as required by the client.

Actions That Do Not Require Review

The following actions do not require MOC review:

- Replacement-in-kind: The replacement of an item with another item that has essentially the same design specifications.
- Operating adjustments that are within established operating limits.
- Personnel changes including Supervisory personnel made necessary due to current field work activities, vacations, sicknesses, and other operational needs as determined by Field Supervisory personnel.
- When replacement personnel meet the minimum training requirements of Subpart O/T-2 certification and have demonstrated the capability to handle the assigned job.

Replacement-In-Kind

Replacement-in-kind refers to actions in which one item is replaced by another item that has essentially the same performance capabilities. The following are examples of criteria that are considered in the determination of whether an action constitutes a replacement-in-kind.
- The equipment is of the same type or style.
- The equipment is made of the same material.
- Pressure ratings are the same.
- Performance characteristics are the same.
- Electrical equipment classifications are the same.
- Equipment is the same size.
- Piping is the same schedule or thickness.

Facility Changes

It is important that employees be allowed to maintain continuity of operations within safe operating limits at a facility. A subtle change on the surface may not seem to impact safety, but upon closer review, may be seen to present a significant impact on the safety of a facility.

Facility changes that require the MOC process are:
- Any change that results in a change to one or more of the following:
  - Mechanical Flow Diagrams
  - SAFE Charts
  - Area Classification Drawings
  - Equipment Layout Drawings
  - Operating Procedures

Examples of the above changes are listed as follows:
- Construction of new production or process facilities
- New facility projects that involve production or process tie-ins to existing facilities, equipment reconfiguration, or modification of existing facilities/equipment.
- Modification of existing facilities that result in changes of facility or equipment design, structural support, layout, or configuration.
- Significant changes in operating conditions, including pressure, temperatures, flow rates, or process conditions different from those in the original process or mechanical design.
- Equipment changes, including the addition of new equipment or modifications of existing equipment, including changes in alarms or instrumentation.
- Modifications of the process or equipment that cause changes in the facilities pressure relief requirements, including increased flow rates, operation at higher
temperatures or pressures, increased size of equipment, or the addition of equipment that might contribute to greater pressure relief requirements.

- Bypass connections around equipment that in normally in service.

**Training Requirements**

All personnel affected by the MOC must be trained in the changes made to any existing operating procedure, operating conditions, equipment, materials or personnel.

- Training must be completed before any operations or maintenance can commence.
- All training must be documented and entered into the employees training record.

**Document Retention**

Documentation of changes (completed MOC forms) shall be kept on file as required by the client.
35. JOB SAFETY ANALYSIS (JSA)

Purpose

Job Safety Analysis are designed to be used as a tool to communicate the steps of a particular job, potential hazards associated with each step and actions, procedures or equipment to be used to minimize or eliminate those hazards. Linear Controls, Inc. requires that a job safety analysis be reviewed before each job begins. Using JSA’s will not only increase safety performance, but will also increase production due to the fact that every employee will be informed of all steps or procedures associated with the job to be performed. Employee participation in the review of JSA’s is pertinent to ensuring all aspects of the job are covered.

Procedure

All Linear Controls, Inc. personnel involved in the task to be performed must be included in the hazard identification and JSA process.

The hazard identification process should be used for routine and non-routine activities as well as new processes, changes in operation, products or services as applicable.

- Hazards should be prioritized and addressed based on the risk associated with the task.

The Steps Involved in Performing a JSA:

1. The job to be analyzed is chosen.
2. A team is formed in order to write the JSA. This may be done in a tailgate safety meeting with the entire crew. In some cases, a foreman or superintendent may have a JSA prepared prior to beginning a safety meeting and may solicit input during review of the JSA.
3. The immediate supervisor of the crew actually performing the job must conduct the JSA.
4. The person with Ultimate Work Authority (UWA) must be identified on the JSA and all personnel involved with the job must know who has UWA.
5. The team then breaks the job down into the individual steps that make up that job.
6. Environmental, Safety and Health hazards and impacts must be considered and identified and recorded in development of the JSA.
7. The team devises solutions to minimize or eliminate the hazards. This may in some cases result in a change of procedure to perform the job.
8. Proper tools and Personal Protective Equipment to be used in performing the job as well as any required permits to complete the job are also identified.
9. All personnel performing the job must be aware of the hazards and sign the JSA.
10. Two signatures are required on the JSA form before work can commence:
    - The immediate supervisor of the crew performing the job must sign the JSA.
    - The individual designated as being the person in charge of the facility by the operator must approve and sign all JSA’s. This individual need not be the UWA.
11. In the event of imminent risk or danger the UWA must authorize work to resume in writing as soon as practical, utilizing the Authorization to Resume Work Form.
12. A copy of the JSA must remain on site and accessible to employees until the job is completed.
Training

Job Safety Analysis training will be provided to all offshore personnel.

JSA, UWA, and Stop Work training is included in new employee orientations.
  • Use and care of proper PPE is also included in new employee orientations.

When a task being performed unexpectedly changes due to unforeseen complications, Linear Controls, Inc. employees shall be informed of the changes in job procedures and a new JSA written if necessary.
36. FATIGUE MANAGEMENT

Purpose

This procedure provides guidelines for the protection of individuals who work in hot and uncomfortable environments.

Scope

This procedure applies to all Linear Controls, Inc. personnel and subcontractors working on projects where heat stress and fatigue safety requirements are applicable.

Responsibilities

Employees must report fatigue/tiredness and lack of mental acuity to their supervisor. Supervisors must take appropriate actions to assist employees.

Procedure

Linear Controls, Inc. will provide equipment such as anti-fatigue mats for standing, lift assist devices for repetitive lifting and other ergonomic devices as deemed appropriate, chairs for workers to sit periodically, and provide periodic rest breaks for personnel.

To help increase mental fitness, Linear Controls, Inc. will set work hour limitations and will control job rotation schedules to control fatigue and allow for sufficient sleep.

- Work tasks to control fatigue should be analyzed and evaluated periodically.

Factors Contributing to Heat Stress and Fatigue

- Wearing Personal Protective Equipment (PPE) can place workers at considerable risk of developing heat stress. Health effects range from transient heat fatigue to serious illness or death.
- Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and certain individual worker characteristics. Regular monitoring and other preventative precautions shall be employed.

Individuals vary in their susceptibility to heat stress. Factors that may predispose someone to heat stress include the following:

- Lack of physical fitness
- Lack of acclimatization
- Age
- Dehydration
- Obesity
- Alcohol and drug use
- Infection
- Sunburn
- Diarrhea
- Chronic disease
Reduced work tolerance and the increased risk of excessive heat are directly influenced by the amount and type of PPE worn. Once PPE is selected, the safe duration of work/rest periods should be determined based on the following:

- Anticipated work rate
- Ambient temperature and other environmental factors
- Type of protective device(s)
- Individual worker characteristics and fitness

Monitoring

The following procedures shall be used to monitor field personnel at the site:

- Physical factors that contribute to heat related illness should be taken into consideration before performing a task. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, and clothing color, weight and breathability
- Supervisors must ensure personal factors that contribute to heat related illness are taken into consideration before assigning a task where there is the possibility of a heat-related illness occurring. The most common personal factors that can contribute to heat related illness are age, weight/fitness, drug/alcohol use, prior heat-related illness, etc.

Prevention

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because suffering from heat stroke or heat exhaustion causes a person to be prone to additional heat injuries.

To avoid heat stress, the following steps shall be used to adjust work schedules:

- Modify work/rest schedules based on the work environment.
- Mandate work slowdowns as needed.
- Rotate personnel. Alternate job functions to minimize overexertion at one task.
- Add additional personnel to work teams.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.

Employees must not chronically use over-the-counter or prescription drugs to increase mental alertness. Employees should be discouraged from taking any substance known to increase fatigue in that employee, including fatigue that sets in after the effects of the drug wear off.

Employees shall have access to potable drinking water. Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity throughout the work shift.

When heavy sweating occurs, employees should increase fluid intake.

Workers shall be encouraged to maintain an optimal level of physical fitness as follows:

- Acclimatize workers to site work conditions, i.e., temperature, protective clothing, and workload, as necessary.
- Urge workers to maintain normal weight levels.
Employees suffering from heat illness or believing a preventative recovery period is needed shall be provided access to an area with shade that is open to the air or provided with ventilation and/or cooling.

Training

Linear Controls, Inc. will provide initial and annual training on how to recognize fatigue, how to control fatigue through appropriate work and personal habits, and reporting of fatigue to supervision.

Employees shall be trained to recognize and treat heat stress, and to identify the signs and symptoms of heat stress.
37. JOB COMPETENCY

Purpose

The purpose of this procedure is to establish general job competency guidelines.

Responsibilities

The Safety Coordinator will identify, update and monitor qualification requirements, job titles and training documentation.

Supervisors will ensure all employees assigned to their project meet job competency requirements and complete the required training.

Supervisors will ensure employees are competent to complete the assigned task.

Supervisors will ensure employees have sufficient experience to safely perform their task without supervision or with minimal supervision.

Employees shall attend technical and safety training, and follow the requirements of safety and health management training

General

Competence is a combination of knowledge, understanding and skill. The following components are to be considered for competency assurance:

- Experience
- Level of Knowledge
- Capability to Perform

Linear Controls, Inc. view of competency involves the continuous assessment of training and development needs against an employee’s responsibilities, abilities and assigned tasks. This process enables the continuous improvement loop that feeds back into training and development activities that ensures competency is an ongoing process.

1) Job Description Identified
   a. Candidate selection and hiring process
      i. Background Check
      ii. Drug Screen
      iii. General Physical
   b. Person assessed and hired for open position

2) Experience, Qualifications Assessed for Initial Training
   a. Initial training completed

3) Further Training Required?
   a. If no, ready for work
   b. Continuing education
      i. Completed through quarterly technical training for required personnel

4) Annual Employee Evaluation
Competency is verified before employees are permitted to perform tasks independently. A competent person (supervisor, instructor, or other qualified personnel) must verify that an employee is competent to perform their assigned duties before being allowed to work independently.

**Identification of Documentation**

Documentation is obtained from employees to demonstrate they meet the qualifications of their job. Based on the job description requirements documentation may include educational, certifications, licenses, prior acceptable training course completion, etc.

Documentation is reviewed and confirmed as actual during the employee hiring process.

**Identification of Positions**

An organizational chart and list of job titles has been established by Linear Controls, Inc. Based on the positions and their exposure to risk, their required training is entered into a training matrix. Job descriptions are prepared for each job title.

**Identification of Qualifications**

Minimum qualification requirements for each job title have been established by Linear Controls, Inc. Qualifications may include a combination of education, certifications and work experience. Safety training completion for the indicated job title is required before full qualifications are met to allow an employee to begin work.

**Identification of Training and Competency Needs**

Employees (new or transferred) are provided job specific training related to their roles and responsibilities and trained on the tasks they perform on a regular basis. Training is identified in our training matrix which specifies safety and health training needs by job title. Our training matrix is updated based on changing risks.

**Training Records**

All training records are maintained by Linear Controls, Inc. Safety Coordinator.

**Training Documentation**

All training must be documented with date, employee name, employee signature, instructor name, and title of course.

Each new employee shall receive an orientation prior to beginning any work.
38. SUBCONTRACTOR MANAGEMENT PLAN

Purpose

Linear Controls, Inc. has a strong commitment of providing a safe environment for employees and extends this commitment to all subcontractors.

Linear Controls, Inc. rarely uses subcontractors and this plan was development to meet owner/client requirements and will be used if needed.

Scope

This procedure applies to all Linear Controls, Inc. facilities and client locations whenever subcontractors are to be utilized to perform any work activities. The safety and health criteria set forth in this section reflect the minimum requirements. Additional safety and health requirements may be set forth on a project specific basis and may be implemented under project specific, contractual, and/or EH&S Site Specific requirements.

Procedure

Subcontractor Requirements

Subcontractors will be pre-qualified by reviewing their safety programs, safety training documents and safety statistics. Acceptable safety programs and performance will be utilized in selecting subcontractors.

The following requirements will be also be utilized in the selection process for any and all subcontractors of Linear Controls, Inc.

Each subcontractor is responsible for the safety and health of its employees. Full compliance with OSHA, ANSI standards incorporated by reference, Federal, State, and Local regulations is mandatory. In addition, Linear Controls, Inc. requires that subcontractors and their employees comply with the items listed below. Subcontractors shall also follow all policies and procedures set forth by the client. Failure to comply could result in disqualification and removal of a subcontractor.

Subcontractor and its lower tier subcontractors are responsible for:

- Awareness, knowledge, and full compliance with all applicable rules, regulations, laws, and practices applicable to subcontractor's work that are prescribed by Linear Controls, Inc., Clients, and any government or agency that governs the safety and health of employees. Within the United States and its Territories, these include, but are not limited to, regulations promulgated by the following: Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Department of Transportation (DOT), Department of Energy, Nuclear Regulatory Commission (NRC), Mine Safety and Health Administration (MSHA).

- The subcontractor shall be required to ensure strict compliance with all of the client’s and Linear Controls, Inc. procedures, as well as with all applicable local, state, and federal regulations, including all regulations issued under the authority
of OSHA. The most stringent of the applicable governmental regulations (or this document) shall apply, should a conflict arise.

- Failure of this procedure to reference specific OSHA or other regulations does NOT excuse the subcontractor or its employees, agents and subcontractors from following those regulations that may be applicable to the scope of work being performed by the subcontractor.
- Linear Controls, Inc. shall have the right to stop work whenever safety violations are observed which could jeopardize the well being of personnel and equipment. The expense of such work stoppage and resultant standby time shall be at the subcontractor’s expense. The failure or refusal of the subcontractor to correct the observed violation may result in the termination of the subcontract, and/or the dismissal from the jobsite of those responsible for such failure or refusal. In any event, the subcontractor understands and agrees that any violation of applicable safety and health laws, rules or regulations shall be sufficient cause for termination of subcontractor’s service.
- The subcontractor shall be responsible for familiarizing itself and each of its employees, subcontractors, agents, and invitees with the rules and regulations. In the event any of them violate any such rules and/or regulations, the subcontractor shall cause such persons to be dismissed permanently from the project site and replace them with individuals deemed acceptable by Linear Controls, Inc.
- Subcontractors shall be included in pre-job meetings or kick-off meetings, and safety orientations as required by Linear Controls, Inc. and/or client.
- Subcontractors shall be included in tailgate safety meetings, job safety analysis or hazard assessments, and on job safety inspections.
- At the conclusion of projects, Linear Controls, Inc. will conduct a post-job safety performance review on the subcontractor.

**Responsibilities**

**Subcontractor’s Site Safety Manager/ Responsible Individual**

**Force of Subcontractor and its Lower Tier Subcontractors is less than 20:**

The subcontractor shall provide a responsible individual, competent through experience and training, who is able to identify hazards associated with the subcontractor's work and who has overall responsibility for the safety and health performance of the subcontractor's activities, as well as the activities of lower tier subcontractors. The person shall be designated by the subcontractor and shall be made known to Linear Controls, Inc. prior to commencement of project activities. This person shall also be present on the project site during all subcontractor activities and shall ensure the provisions of this policy and the requirements of any project-specific environmental, health, and safety plan are fully implemented. This individual may have other duties but their primary duty shall be safety.

If the Direct Labor Force of Subcontractor and its Lower Tier Subcontractors is 20 or more, the subcontractor shall provide a full-time site safety manager who shall be dedicated solely to performing safety responsibilities at the project site and must be competent to perform safety responsibilities for both the subcontractor's work and the number of subcontractor's personnel.
The subcontractor’s site safety manager is required to be present on the project site during regular working hours, unless waived by the client.

The site safety manager/responsible individual shall perform the following:

- The site safety manager/responsible individual will attend pre-job safety meetings and ensure that environmental, health, and safety orientations and briefings are performed.
- The site safety manager/responsible individual shall submit weekly safety and health inspection reports to Linear Controls, Inc. for activities on the project site as they relate to the work. This includes the recording of hazards identified and corrective actions taken.
- The site safety manager/responsible individual shall perform accident and incident investigations associated with the work and shall fully cooperate with any other accident or incident investigations that may be required.
- The site safety manager/responsible individual shall maintain safety and health statistical information and provide weekly and monthly reports to Linear Controls, Inc. The reports shall include hours worked; the number of first aid and medical treatment cases; the number of recordable injuries and illnesses; and the number of restricted and lost workday cases as defined by the US Occupational Health and Safety Administration. These reports shall include statistical information related to all of Subcontractor’s activities as well as the activities of lower tier subcontractors.
- The site safety manager/responsible individual shall provide Linear Controls, Inc. immediate notification of any regulatory inspection. All resulting citations or notices of deficiencies are to be provided to Linear Controls, Inc.

Documentation and Written EH&S Program

Prior to commencing work at the project site, subcontractor must submit all required documents to Linear Controls, Inc. Examples of such documents are as follows:

- Subcontractor's project-specific environmental, health, and safety plan
- Personnel training certificates
- Insurance certificates
- Construction permits
- Any approved "OSHA Variances," or other approvals as required to safely and legally perform subcontractor's work

Subcontractor's project-specific environmental, health, and safety plan shall, as a minimum, include the following:

- A letter of corporate commitment to environment, health, and safety signed by the CEO or President of the subcontractor’s organization
- A brief description of subcontractor’s work
- An identification of project safety and health goals and objectives
- Activity hazard analyses, for the activities within subcontractor’s work, describing the steps of each principle activity, the hazards associated with each activity, and procedures to be used to eliminate or control the hazards
- An identification of required personal protective equipment
- Specialized medical surveillance and/or air monitoring procedures (if applicable)
- Safe work procedures (these may be incorporated by reference into subcontractor's environmental, health, and safety plan)
- Provisions for safety inspections and audits
- Project emergency response and preparedness procedures, including provisions for providing first aid and notification of emergency services

Subcontractor and lower tier subcontractors must also submit a hazardous waste management plan that addresses the handling, labeling, transportation, and disposal of hazardous waste.

Subcontractor shall be solely responsible for compliance with the provisions of all applicable regulations associated with hazardous waste generated as a consequence of subcontractor's activities.

**Reporting**

Subcontractor shall ensure that all job-related incidents and injuries, no matter how minor, are reported to Linear Controls, Inc. immediately.

**Safety Training and Education**

All subcontractor personnel must attend Linear Controls, Inc. safety orientation and/or client orientation.

The subcontractor shall instruct each employee, agent and subcontractor in the recognition and correction of unsafe acts and conditions and the regulations applicable to the subcontractor’s work environment. The employee agent and subcontractor shall use the instructions to control or eliminate any hazards or other exposure to illness or injury.

The subcontractor shall acquaint each subcontractor employee, agent and subcontractor with the safety and emergency equipment available and the procedures to be followed in each type of accident occurrence.

The subcontractor shall maintain training records for each employee at the project site and will immediately provide those records to Linear Controls, Inc. upon request.

**Safety Meetings**

Toolbox safety meetings must be conducted daily. One weekly meeting must be fully documented regarding content and attendance.

Subcontractor shall require each work crew to complete a Job Safety Analysis (JSA) daily for all tasks. Subcontractors will use Linear Controls, Inc. or JSA form or a functional equivalent.

**Behavioral Based Safety Program**

Subcontractors and lower tier subcontractors having ten (10) or more personnel on the project site are required to implement a Behavioral Based Safety Program.
- The subcontractor shall provide the Behavioral Based Safety Program materials and training.
Personnel Requirements

Personal Conduct

- Horseplay, fighting, gambling, explosives, possession of firearms, drinking alcoholic beverages, use of regulated drugs, being under the influence of drugs or alcohol, theft, vandalism, sabotage, and distribution of unauthorized literature, shall be cause to bar those involved from the site.
- Subcontractor will comply with client and Linear Controls, Inc. substance abuse policies.

Personal Protective Equipment (PPE) and Personal Attire

Subcontractors shall ensure that all personnel have, or are provided, required PPE and clothing, including, but not limited to the following:

- Safety glasses that meet ANSI Z-87.1 requirements must be worn at all times when on the project site, except in administrative areas. Safety glasses must have rigid side shields. No contact lenses are to be worn in the work area unless required for medical reasons (administrative areas are excluded).
- Goggles and a face shield must be worn when cutting or grinding or in designated areas.
- Hard-soled, heavy-leather, safety-toed shoes or boots (ANSI Z-41 approved) are required to be worn while on the project site, except in administrative areas. Tennis shoes or athletic-style safety shoes are not permitted.
- Hard hats (not bump caps) are required, and must conform to ANSI Z-89.1, Class B. The hard hat must not be painted and must have subcontractor’s identification logo or name on the front of the hat.
- Hearing protection must be worn whenever noise is measured above 85dB, or normal conversation cannot be conducted, or when the area is posted as noise-hazardous.
- Shirts must have at least a four-inch sleeve and shirttails must be tucked into the trousers unless welding. Tank tops and shorts are prohibited. Perforated or mesh shirts and pants are prohibited. Nylon or polyester clothing is prohibited where it may be exposed to fire or excessive heat.
- Neck ties; hair below the top of the shoulders; facial piercing, finger rings, except wedding bands unless specifically prohibited due to Project or Owner’s requirements; dangling necklaces; bracelets; or earrings shall not be worn on project site. These restrictions do not apply to administrative areas. Watches may be worn on the project site.
- Full-body style safety harnesses and dual (two) shock absorbing fall protection lanyards with devices to attach lanyards to beams—such as beam straps—will be used at project site where required. Belts for fall protection are not allowed.
  - Continual fall protection is required when working more than 6 feet above the next lowest level.
- The personal work clothes of employees shall fit their work assignments and be in adequate condition.
39. MOBILE CRANE OPERATIONS

Mobile Crane Operation Program

The Mobile Crane Operation Program establishes guidelines to be followed whenever any Linear Controls, Inc. personnel operate mobile cranes at this company. The rules established are to be followed to:

- Provide a safe working environment,
- Govern operator use of mobile cranes, and
- Ensure proper care and maintenance of mobile cranes and associated equipment.

The procedures here establish uniform requirements designed to ensure that mobile crane safety training, operation and maintenance practices are communicated to and understood by the affected employee(s). These requirements also are designed to ensure that procedures are in place to safeguard the health and safety of all employees.

Administrative Duties

The Safety Coordinator has overall responsibility for the Mobile Crane Operation Program. Copies of this written program may be obtained from the Safety Coordinator.

Training

The Safety Coordinator will make arrangements with the department supervisor to schedule training for all mobile crane operators.

Before training a new employee, the Safety Coordinator will determine if the potential mobile crane operator is capable of performing the duties necessary to be a competent and safe operator. This is based upon his/her physical and mental abilities to perform job functions that are essential to the operation of mobile cranes. These capabilities include the level at which the operator must:

- See and hear within reasonably acceptable limits. This includes the ability to see at a distance and peripherally. In certain instances, it is also necessary for the driver to discern different colors, primarily red, yellow and green.
- Endure the physical demands of the job.
- Endure the environmental extremes of the job, such as the ability of the person to work in areas of excessive cold or heat. An operator must be able to climb onto and off of mobile cranes, to sit in the mobile crane for extended periods of time and to turn his/her body to look in the direction of travel of the boom.

Once the Safety Coordinator determines that a potential operator is capable of performing mobile crane duties, the potential operator will attend initial training and operation evaluation provided by an in-house trainer or a contract training service provider.
Initial Training

During an operator's initial training, the instructors combine both classroom instruction and practical training.

All mobile crane operators are trained and tested on the equipment they will be operating before they begin their job. The work areas where the mobile crane will be used also present particular hazards. For this reason, Linear Controls, Inc. covers the operational hazards of our mobile crane, including:

- General hazards that apply to the operation of all or most mobile cranes.
- Hazards associated with the particular make and model of mobile crane.
- Hazards of the workplace in general.
- Hazards of the particular workplace where the mobile crane is operated.

If each potential operator has received training in any of the elements of our training program and is evaluated to be competent, they need not be retrained in those elements before initial assignment in our workplace.

Training Certification

After an employee has completed the training program, the instructor will determine whether the potential operator can safely perform the job. At this point, the trainee will take a performance test or practical exercise through which the instructor(s) will decide if the training has been adequate.

The Safety Coordinator is responsible for keeping records certifying that each operator has successfully completed operator training and testing. Each certificate includes the name of the operator, the date(s) of the training and the name of person who administered the training and evaluation.

Performance Evaluation

Each certified mobile crane operator is evaluated at least once every three (3) years to verify that the operator has retained and used the knowledge and skills needed to operate safely, this evaluation is performed by an in-house trainer. If the evaluation shows that the operator is lacking the appropriate skills and knowledge, the operator is retrained by the in-house trainer or a contract training service provider.

Refresher Training

Refresher training is administered to an operator if any of the following situations occur:

- If the operator is involved in an accident or a near-miss incident.
- If the operator has been observed operating the crane in an unsafe manner.
- If during an evaluation the operator needs additional training.
• Every 3 years.

Current Certified Mobile Crane Operators

Under no circumstances shall an employee operate the mobile crane until he/she has successfully completed Linear Controls mobile crane training program or a contract training service providers program. Regardless of previous experience, all new operators must at least undergo a performance evaluation. The Safety Coordinator maintains a list of employees who are currently authorized operators of our mobile crane at this company.

Inspections

Periodic inspections are in conjunction with the particular mobile crane’s maintenance or service schedule. Maintenance schedules are normally expressed in days and operating or running hours. Most manufacturer’s operator instruction manuals contain the recommended maintenance schedule. Inspections and maintenance or repair beyond the recommended service schedule are done by authorized workshops and/or service technicians.

Initial Inspections

Our company inspects and tests all cranes to ensure they are capable of safe and reliable operation when initially set or placed in service and after any major repairs or design modification. Prior to operation, the operator must check all systems, controls, and safety devices to ensure they are functioning properly, there are no interferences, and that boom and hoisting configurations necessary to reach the work location will allow the operator to remain within the 50% load limit of the hoists rated capacity.

Frequent Inspections

A competent person shall perform pre-operational crane checks prior to beginning each day. This person walks around the crane looking for defects or problem areas. Components that have a direct bearing on the safety of the crane and whose status can change from day to day with use, must be inspected daily, and when possible, observed during operation for any defects that could affect safe operation. There are three frequent inspections: Pre-Operational (Daily) Walk Around Inspection, Pre-Start-Up (In Cab) Inspection, and Crane Operation Checklist.

Pre-Operational (Daily) Walk Around Inspection

Inspection of crane and rigging equipment will be made at the start of each shift and during usage to make sure they are in a safe operating condition. This inspection is the responsibility of our company competent person(s). Any deficiencies will be repaired, or defective parts replaced, before the equipment can be used.

• The rated load of the crane shall be plainly marked on each side of the crane, and this marking shall be clearly legible from the ground.
Pre-Start-Up (In Cab) Inspection

Our pre-start-up (in cab) inspection, performed by a designated competent person, includes, but is not limited to, the following:

CAB
- Inspection and maintenance records, operator's manual, and appropriate load charts for the loads being lifted are present.
- The cab is clean and free of clutter.
- All controls are labeled as to their function and are free to return to the neutral position when released unless designed to do otherwise.
- All gauges and warning lights are operable
- Signal horn and back up alarms work properly.
- Service/parking brake operates properly.
- The seat is securely attached and the cab door opens outward and operates smoothly.

FIRE EXTINGUISHER
- An accessible fire extinguisher is available in all operator stations or cabs.

FIELD OF VISION
- The window glass is not broken or cracked to the point where it may affect the view of the operator.
- Cab windows are made of safety glass, or equivalent, with no visible distortion that would interfere with safe operation.

PLACARDS
- Rated load capacities, recommended operating speeds, special hazard warnings, i.e., electrical power line clearance requirements, or instructions, and are posted and visible to the operator while at the control station.

OPERATION
- Outriggers, when used, are fully extended and tires are off the ground.
- All brakes and clutches are inspected and tested for proper adjustment and operation.
- Boom hoist lockout and other operator aids, such as anti-two-block devices (ATB) and load moment indicators (LMI), operate and calibrate properly.
- While the engine was running, all gauges and warning lights were checked for proper readings and all controls were operated to see that they are functioning properly.
LOAD RATING CHART

- A durable rating chart(s) with legible letters and figures is attached to the crane in a location accessible to the operator while at the controls.
- Crane operators know how to read the load rating chart. It is not enough to just have load charts available. You may be asked by an OSHA inspector to show adequate understanding and proficient use of the charts as related to the equipment in use and for the loads being lifted.

LOAD CHART REVIEW

- Load charts take into consideration the manufacturer's operating notes supplied with the machine containing important information concerning proper set-up, operation and additional points that need to be considered when calculating load handling capacities of cranes. The following operational conditions are also considered:
  - It is very dangerous to lift a load without knowing whether it is within the rated capacity of the crane.
  - Crane operator should know the load capacity and working radius and should always stay within the rated limits.
  - Under adverse field conditions, operators must reduce the load capacity until it is determined the machine can safely handle the lift.
  - When working at boom lengths or radius between the figures shown on the load capacity chart, the next lower capacity rating will be used.
  - It is dangerous to guess the capacity for boom lengths or radius between those listed on the rating plate.
  - No loads are lifted when winds create an unsafe or hazardous condition.
  - Even a light wind can blow the load out of control, collapse a boom, or tip the machine.

Crane Operation Checklist

The crane operation checklist is performed by a designated competent person and includes but is not limited to the following:

- Only qualified and properly designated people will operate the crane. A qualified person is one who, by possession of a recognized certificate has had the training and experience to safely operate the crane as required. A designated person is an authorized person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the job site.
- All employees will be kept clear of loads about to be lifted and suspended loads.
- Outriggers will be visible to the operator or a signal person during extension or setting.
- No one except the competent person, instructor, or person in training will be allowed on an operating crane.
- The operator will not hoist, lower, swing, or travel while anyone is on the load or hook. This includes riding a bare hook or a load of material.
Periodic Inspections

Periodic inspections include both monthly and annual inspections.

Monthly Periodic Inspection

The monthly periodic inspection interval may vary depending on crane use. The monthly inspection, performed by a designated competent person, includes those items listed for daily inspections as well as, but not limited to:

- No structural damage to the crane.
- No deformed, cracked, or corroded members in the load/stress bearing structure.
- No cracked welded connections.
- No sheaves which: Are cracked, grooving, or damaged from two-blocking; Have undue looseness in the bearing or bushing; Do not have a smooth groove surface; Are an improper size for the wire rope being used; Are missing sheave guard pins.
- No main hoist and auxiliary drums which have: Drum lagging and flanges with cracks or other deficiencies. No undue movement of the drum on its bearings. Wire ropes that do not meet manufacturer's specifications. Over spooling (Note: With rope fully spooled, the drum flanges must extend above the top wrap of the rope.). Proper functioning of spooling devices such as rollers and drum rotation indicator.
- Wire rope is spooled evenly on the hoist drum.
- Wire rope is the proper diameter, length, and type of construction for the particular crane.
- No excessive wear on brake and clutch system parts, linings, pawls, and ratchets.
- No worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers, locking devices, hook roller brackets, removable outrigger attachments lugs, and welds.
- Where the topside of the boom on hydraulic cranes (where the extension sections exert an upward force) main boom, jib and boom extensions are inspected for: Tight connecting pins, bolts, and rivets; Proper adjustment of wear pad; and No cracks, bends, corrosion, or other deformities.
- Repaired boom members are certified and documented that they meet manufacturer's original design standard.
- Load hooks and hook block are inspected for: Cracks or throat openings more than 15 percent of normal or twisted off center more than 10 degrees from the longitudinal axis, Unauthorized welding or evidence of heating, Proper labels showing capacity and weight, Connecting bolts on block cheek plates, Hook swivels and sheave guards, and Hooks used to hoist personnel have effective positive locking safety latches.
- No excessive wear on drive sprockets and/or chain stretch.
- All jibs have positive stops to prevent their movement of more than 5 degrees above the straight line of the jib and boom on conventional type crane booms. The use of cable type belly slings does not constitute compliance with this rule.
- No deterioration of components of hydraulic and pneumatic hoses, fittings, and tubing.
- The working pressure stamped on flexible hoses is more than the working pressure it will be exposed to.
• Turntable is checked for: No weld cracks and loose or missing bolts; Gears and rollers are free of damage, wear and properly adjusted and the components are securely locked and free of cracks or damage; and The swing locking mechanism is functional (pawl, pin) and operable from the cab.
• Identification number is permanently and legibly marked on jibs, blocks, equalizer beams, and all other accessories.
• Counterweight is secured and locked if so equipped.
• Fuel tank filler pipe is located or protected so that spills or overflow of fuel will not run onto the engine, exhaust, or electrical equipment of any machine being fueled.
• Outrigger number, locations, types and type of control are in accordance with manufacturer's specifications.
• Boom stops function properly. Check this by raising the boom very slowly until contact is made and power for boom movement is stopped.
• Boom hoist disconnects are working properly and automatically stops the boom from hoisting when it reaches a predetermined high angle.
• Boom angle indicator (mechanical or electronic) operates properly. Check that the readout is displayed in the cab and that it is giving an accurate readout.
• Jib stops operate properly. They warn the operator and protect the jib from being raised to the point that it overturns onto the boom sections.
• All anti-two-block, two-block warning, and two-block damage prevention systems operate properly.
• All indicators, including load and boom angle indicators, operate and are calibrated properly.
• Steering, braking, and locking device function correctly.
• All other functional operating mechanisms such as brakes, locking mechanisms, hooks, rollers, brackets, outrigger components, limit switches, safety devices, hydraulic cylinders, instruments, and lights are checked.
• All power plants operate properly.

Procedures forOperators

• Do not operate a crane unless you are qualified and properly designated. A qualified person is one who, by possession of a recognized certificate has had the training and experience to safely operate the crane as required. A designated person is an authorized person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the job site.
• No crane shall be loaded beyond its rated capacity except for tests performed by a competent manufacturer representative.
• All lifting equipment will be inspected by the crane operator at the beginning of each work day.
• The hoist rope shall not be used as a sling.
• The crane shall be level and blocked before the load is lifted.
• The load shall be secured and balanced before the load is lifted more than a few inches.
• Before lifting the load ensure the hoist rope is not kinked and multiple part lines are not twisted.
• Do not use the crane to handle materials or loads stored under electric power lines.
• Use taglines to stabilize the load.
• Use insulating boots and gloves when connecting loads or contacting the crane or derrick while in the vicinity of overhead lines.
• Signal persons must understand the hand signals for the type of crane with which they are working. Hand signals must conform to API RP D2 standards.
• Keep the crane clean and free of clutter.
• Cranes shall not be left running while being fueled. All portable cans used for fueling shall be UL listed containers that are equipped with an automatic closing cap and a flame arrester.
• Do not lift a load without knowing whether it is within the rated capacity of the crane.
• Stay within the rated load capacity and working radius.
• Under adverse field conditions, reduce the load capacity until it is determined the crane can safely handle the lift.
• When working at boom lengths or radius between the figures shown on the load capacity chart, use the next lower capacity rating.
• It is dangerous to guess the capacity for boom lengths or radii between those listed on the rating plate.
• Do not lift a load when winds create an unsafe or hazardous condition.
• Even a light wind can blow the load out of control, collapse a boom, or tip the machine.
• Take proper precautions when the velocity of wind exceeds 20 mph.
• If possible, lower or secure booms under high wind conditions.
• Do not use counterweights heavier than the manufacturer’s specified weight.
• When the machine set is not level, understand that the crane capacity and structural integrity can be adversely affected.
• Keep your feet on the pedals while foot pedal brake locks are in use, Brakes could cool allowing the load to fall.

When lifting the load insure:

• The load is not bound, chained, or restrained by any means and is free to be moved.
• There is no sudden acceleration or deceleration of load.
• The load does not contact any obstructions.
• The load is not putting undue stress on the crane from side loading.
• The load shall not be moved while anyone is on the hook or on the load.
• Loads shall not be carried over personnel.

Procedures for all Employees

• All employees will be kept clear of loads about to be lifted and suspended loads.
• All employees will ensure they have proper PPE while working around the crane.
• Any employee can give the emergency stop signal if there is a safety concern.

Operations Near Overhead Electrical Lines
Except where electrical distribution and transmission lines have been de-energized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery, have been erected to prevent physical contact with the lines, equipment or machines shall be operated proximate to power lines only in accordance with the following:

- For lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet.

- For lines rated over 50 kV, minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 kV over 50 kV.

- In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 kV, and 10 feet for voltages over 50 kV, up to and including 345 kV, and 16 feet for voltages up to and including 750 kV.

- A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.

- Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.

**Maintenance**

Investing time and effort into the proper maintenance of our equipment is a day-to-day responsibility. Keeping up with the manufacturer’s recommended maintenance and lubrication schedules, and completing the proper records, will also increase our mobile crane’s longevity and enhance its reliability. Mobile crane operators shall follow the manufacturer’s operator instruction manual for daily, weekly and monthly maintenance.

Periodic maintenance; those completed monthly, every six (6) months, or annually shall be done by a factory-trained expert or dealer.

**Record keeping & Certification**

The Generator Shop Manager is responsible for maintaining the following records on file:

- The log of all monthly periodic inspections on critical items in use (i.e., brakes, crane hooks, and ropes), and include:
  - The date the crane items were inspected,
  - The signature of the person who inspected the crane items,
  - A serial number, or other identifier, for the crane inspected, and
  - The most recent certification record (maintained on file until a new one is prepared).
- The most recent monthly periodic inspection (certification) record.
• A record of the annual inspection for each hoisting machine and piece of equipment used, including the dates and results of the inspection.
• Inspection reports for the annual magnetic particle or other suitable crack detecting inspection.
• Maintenance records.
• Any results of any equipment specifications and limitations made by a qualified engineer. (If we do not have manufacturer’s specifications and limitations for our equipment, determination of those limitations is made by a qualified engineer.)
• Any written approval from the manufacturer of any modifications or additions that affect the capacity or safe operation of our equipment. In no case will the original safety factor of the equipment be reduced.
• Any tests to see that employees are not exposed to unsafe concentrations of toxic gasses or oxygen-deficient atmospheres. (If the crane is going to be operated in an enclosed space, tests will be made.)
40. Used Oil Management Policy

Purpose

The purpose of this procedure is to establish guidelines for all Linear Controls personnel in the proper handling, storage, shipping/receiving, and disposal of used oil in compliance with the Environmental Protection Agency (EPA) requirements under Title 40 of the Code of Federal Regulations (CFR) Part 279.

Scope

This procedure applies to all personnel including company, client, and/or visitors while at one of the company facilities.

Procedure

This policy provides a written description of used oil management procedures and provides guidance to all personnel on the safe use, handling, storage, disposal methods, and transportation requirements for used oil.

Used Oil Defined

The EPA defines used oil as any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities. This includes oils that are used as hydraulic fluid as well as oils that are used to lubricate automobiles and other machinery, cool engines, or suspend materials in industrial processes.

Used Oil Management

Linear Controls generates used oil from maintenance and overhaul of generators. Since we do not mix engine lubrications oil with other wastes it does not contain any contaminants that would preclude it from being recycled.

Linear Controls adheres to the following practices. We:

Never dump or dispose of used oil in the trash, in sewers, or on the ground.

Ensure our collection and storage set-up is leak proof, spill proof, and that tanks have lids or are covered to prevent water from entering and are labeled.

Maintain our collection containers regularly, comply with local fire and safety regulations, and avoid leaks and spills.

Clean up any used oil spills or leaks. This includes providing soak-up material for minor spills.

Keep records of used oil removed by outside vendors.
Storing Used Oil

Linear Controls stores used oil in portable containers due to the relatively small amount of used oil that is generated from the maintenance and overhaul of generators each month. Linear Controls follows these storage practices. We:

Never mix used oil with any other material. Linear Controls keeps gasoline, solvents, degreasers, paints, and so on, from making the used oil a hazardous waste and increasing collection costs.

Carefully record the amount of used oil placed into and removed from storage devices.

Have installed a secondary containment system around our portable containers to ensure that any spilled oil may be recollected and removed.

Keep sorbent materials such as kitty litter and sawdust to clean up any spills that occur.

Keep the area near the storage devices neat and clean.

Recycling Used Oil

Linear Controls recycles used oil from maintenance and overhaul of generators. Used oil is taken away by a licensed recycling company in the most environmentally safe method.

Used Oil Spill Response

Even though steps have been put in place to prevent leaks or spills from occurring, Linear Controls is prepared to respond to spills of used oil. In the event of a leak or spill employees will stop the oil from flowing at the source and use sorbent materials to help contain and recover the used oil. All leaked and spilled oil collected during cleanup will be handled as used oil. Any cleanup materials used such as rags and other sorbent materials that contain free-flowing used oil will be handled according to the used oil management standards. Damaged containers will be removed, repaired or replaced immediately.

Shipping/Transportation of Used Oil

Linear Controls follows transportation requirements in Title 40 of the Code of Federal Regulations (CFR) Part 279.24 and only uses transporters who have obtained EPA identification numbers to transport used oil generated during maintenance and overhaul of generators.

Employee Training

Linear Controls personnel whose activities involve handling, storing, recycling, shipping/receiving, or clean up of used oil shall be informed of used oil management procedures relevant to the positions in which they work. All employees who handle used oil are required to be familiar with the Used Oil Management Policy.
Recordkeeping

The Generator Shop is responsible for Keeping and maintaining copies of waste oil forms.

Maintaining the Used Oil Management Plan

The Safety & Training Coordinator is responsible for:

Conducting periodic site audits to ensure employees are adhering to the policy and that all procedures are being followed.

Updating the plan as needed due to changes in state or federal regulations governing used oil.
41: Fit for Duty

Purpose

Linear Controls is committed to providing a safe and healthy workplace for its employees. In order to provide a safe and healthy work environment, employees must be able to perform their job duties in a safe, secure, productive, and efficient manner, and remain able to do so throughout the entire time they are working. Employees who are not fit for duty may present a safety hazard to themselves and others.

The purpose of this procedure is to ensure that all new hire candidates are evaluated during their pre-employment phase and are approved as medically fit to perform all duties as required for their position. This procedure also applies to those situations where employee performance / behavior calls into question the individual’s fitness for duty.

General Requirements

Medical exams by a physician who has adequate qualifications and experience are required to determine fitness for duty for new hire candidates and return-to-duty for any employee following an absence due to job related or personal illness or injury.

Fit for Duty

Prior to employment new hire candidates will submit to a fit for duty evaluation by a physician who has adequate qualifications and experience to perform the evaluation. The examining physician will be provided with the new hire candidate’s job scope in order to carry out a proper fit for duty evaluation. In those situations where basic medical evaluation results in findings of concern or need for other additional medical information, the new hire candidate will be so advised and given the opportunity to provide the needed information via a personal healthcare provider at his / her own expense. If a new hire candidate fails the fit for duty evaluation he or she will not be allowed to work for Linear Controls.

Return to Duty

Employees returning to duty after a job related or personal injury or illness will be required to have a medical evaluation by a physician who has adequate qualifications and experience to perform the evaluation. Medical evaluations for Return to Duty must be submitted to the Safety Coordinator, HR and/or the employee’s Supervisor prior to going back to work. No employee will be allow to return to work after a job related or personal injury or illness without approval from a qualified physician.